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ORIGINAL ARTICLES.

THE TOXEMIC FACTOR IN DIABETES MELLITUS—A CLINICAL STUDY.[1]

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In view of the almost constant clinical occurrence of toxemic states, either as primary or secondary phenomena, the scope and importance of which have not yet been fully and generally recognized, it becomes a question of practical moment to define their rôle in different diseased conditions. My purpose in presenting this paper is, first, to briefly examine the whole question, and second, to present a few personal observations.

While it is not my intention to traverse the entire subject of diabetes mellitus, there are certain fundamental propositions which must be briefly considered as points of departure. The chief symptom is a more or less severe glycosuria, which is dependent upon an antecedent glycemia. This glycosuria is the ultimate fact which is constantly recognized, although it is, as a matter of course, dependent upon some condition still more remote, and differs widely in separate groups of cases. It may be positively stated that it is directly dependent upon a faulty metabolism. But this is not a sufficient explanation, and the real question is, whence and why this disturbance of metabolism?

The answer to this question involves the entire pathology of the disease. The importance of the pancreas as a possible etiologic factor appears to be conclusively proven by the experiments of Mering and Minkowski, and the findings of post-mortem examinations. This can only be true, however, in a limited number of

[1] Read before the Northwestern Ohio Medical Association, Lima, Ohio, Dec. 9, 1898.

cases, inasmuch as recent investigations have shown that in a considerable proportion, possibly one-half, nothing whatever can be found wrong with the pancreas macroscopically or microscopically. Another fact which has been experimentally demonstrated is that so far as the lower animals are concerned it is not the ordinary secretion of the gland which is poured into the intestine that prevents an excessive glycemia by transformation of the glycogen, but a "something," very possibly a so-called internal secretion, which passes directly into the blood without the intervention of the duct. No other explanation seems possible of the effect of subcutaneous or peritoneal pancreatic grafts in preventing the occurrence of a pathological glycemia after complete extirpation of this organ. It would thus seem — and this is a point which I desire to especially emphasize — that the glycogen-destroying function of the pancreas is dependent upon a chemical product thrown directly into the blood.

We must also remember the well known effect of disease or injury of the nerve centers in the production of glycosuria. Pavy, Frerichs and others regard nervous disturbances as the most important factor in its etiology. But whether they act by an excessive stimulation of the glycogenic function of the liver caused by an intense hyperemia, or in some other way, is a question difficult to answer. Pathologic anatomy tends to minimize, if not entirely nullify, the importance of the liver as a factor in the causation of diabetes; but its well known glycogenic function, together with the frequent occurrence in diabetes of symptoms of hepatic disturbance, such as tenderness, enlargement, etc., should make us cautious in excluding the liver from a place in the etiologic rôle.

In a certain proportion of cases of severe and fatal diabetes, the most searching examination fails to reveal any organic change whatever, excepting such as are inconstant and most probably secondary in their character. For the explanation of such cases the so-called endogenous theory has been invoked, which means that there is some sort of an undefined and indefinable abnormality in the developmental processes of the organism, by or through which the power of the organism to transform its own glycogen is limited or destroyed. Such an intangible assumption as this shows how exceedingly imperfect is our knowledge of the true nature of this disease, and not only justifies but appears to render imperative a further search for causal conditions along other lines which cannot possibly be more abstractly hypothetical than the endogenous theory.

In considering these problems a doubt arises as to whether the different cases of diabetes due to such diverse causes really belong

to one and the same type of disease. This is a question which has often been raised before and differently answered. It seems to be pretty generally held that, in so far as it concerns the severer grades of diabetes, the answer is an affirmative one, and that they are identical in nature. The answer really hinges to a certain extent upon what we mean by a unity in the nature of a group of cases presenting similar symptoms. If we mean an identity of clinical phenomena, with characteristic features bearing a close resemblance to each other throughout a series of cases, with the same inherent tendencies, but without reference to the nature of ultimate causes, then this is undoubtedly the correct answer to this question. A glycosuria, more or less intense, resulting from a corresponding glycemia, must from this point of view be regarded as constituting the essential nature of the disease without reference to the antecedent conditions, or causes which have led up to it. It seems to me that this is a somewhat short-sighted and narrow measure to apply to a disease, in any case in which the state of our knowledge will permit us to look further into the nature of things. It is not the measure which is usually applied in other instances. The same line of reasoning would lead us to regard albuminuria as a distinct disease, and we would only be prevented from doing so by the mere accident that the proteid waste in the one instance does not cause the same disastrous ravages upon the organism that the carbohydrate waste does in the other. For one I cannot avoid the conviction that, however conspicuous and overwhelmingly important the glycosuria and its attendant phenomena may become in a group of cases of totally diverse origin, it is quite as irrational to look upon them as identical in nature as it would be to so regard a similar group of cases of albuminuria, one of which may be due to a nephritis, another to a hydremia, and still another to alteration of vascular tension. It is true that this one symptom of glycosuria, on account of its paramount importance, does and necessarily must receive our first and foremost consideration in the interest of the patient, but we should never lose sight of the ultimate causes upon which, taken together with the symptomatology, the real nature of disease, properly so called, depends.

If there were sufficient grounds for accepting the endogenous theory of a developmental abnormality, then all cases of diabetes might be regarded as identical in character, and dependent upon an inherent tendency grounded in a developmental defect, and from this point of view all of the known causes, such as pancreatic disease, disease of the nerve centers, etc., would be regarded as

secondary in character, simply exciting the primary cause into active operation. But although there are certain facts the trend of which is in this direction, the theory at present rests upon too unsubstantial a basis to command our assent, and we must continue our search for causes more tangible in character and more demonstrably adequate in their nature.

In order that I may not be misunderstood, I wish to say at the outset that I do not regard an exclusive chemic origin of diabetes as proven in any clinical case. Certain facts, however, have long impressed me with the possibility of such an origin, and I will now proceed to present these facts, which are both experimental and clinical in character.

The plausibility of a chemic origin is supported by numerous well known experimental data, chief among which is the so-called phloridzin diabetes. This chemic substance is derived from the bark of the trunk and root of apple, pear, plum, and cherry trees. When introduced into the circulation, either by hypodermic injection or through the stomach, it produces glycosuria, which lasts as long as the drug administration continues. This result is constant in the human subject, as well as in dogs, which were first experimented on by Mering. In one of his patients one gramme was administered twice daily for a month, the patient during this time excreting nearly one-fourth of a pound of sugar daily. The glycosuria disappeared the day following the last dose, and the patient was apparently as well as ever. In the lower animals its continuous administration sometimes produces not only glycosuria, but the entire symptom-complex of diabetes, including acetone, oxybutyric acid, with symptoms resembling coma, followed by emaciation and death. There is good reason to believe that if such experiments could be performed on the human subject the clinical picture presented would be absolutely indistinguishable from the fatal forms of diabetes.

I am perfectly well aware that it has been recently claimed that phloridzin diabetes is the result of kidney lesions produced by the drug. This view must be accepted with the greatest reservation, especially because nearly fifty per cent of all cases of fatal diabetes in the human subject show notable kidney lesions, because albuminuria is by no means an infrequent phenomenon in this disease, and because the possibility of a purely nephritic glycosuria remains to be proven. It seems more probable that the kidney lesions discovered in phloridzin diabetes are produced in the same manner as they are in the clinical variety of the disease, whether this is

by the irritating effect of the glucose, acetone, or oxybutyric acid eliminated through the kidney, or through some other unknown manner.

Up to a recent time the question of a pathologic glycemia in phloridzin diabetes has been disputed, but the investigations of Coolen and Pavy have recently resulted in the demonstration of an increased amount of sugar in the blood, precisely the same as occurs in the clinical type of diabetes.

One other point with reference to phloridzin diabetes seems worthy of note. It does not produce the glycemia and resulting glycosuria by any sort of action upon the pancreas, as proven by the fact that this phenomenon results in certain animals which are not rendered diabetic by extirpation of this organ.

Taken together, the ascertained facts with reference to phloridzin diabetes seem to warrant the conclusion that it differs in no essential particular from the clinical type of the disease, excepting in its origin, which difference is no greater than those admitted to exist between the different groups of the latter.

There are numerous other drugs the administration of which produces glycosuria, but for the most part, like ether, chloroform, etc., they have other toxic effects which make them impractical for experimental purposes; and with the clearly demonstrated facts of phloridzin diabetes before us the plausibility of a possible toxemic origin, or at least exacerbation of diabetes, must be admitted. If one chooses to speculate upon the possible methods of operation, the parallelism suggested by toxins and antitoxins, which I think the recent investigations of Martin prove to be directly chemical in character, offers an inviting field. It should be remembered that the sugar-destroying power of the pancreas almost certainly depends upon some sort of ferment, or other chemic substance, thrown directly from the gland cells into the blood. Is it not as probable that the action of this ferment may be more or less completely antagonized or destroyed by the action of some other chemic substance in solution, as that an antitoxin introduced into the circulation should nullify the effects of a toxin already there?

Admitting that a toxemic diabetes may occur, for phloridzin cannot act otherwise than as a blood poison, our next step should be to survey the field and inquire into the possible source and character of the toxins which might find their way into the circulation and produce effects similar to those of phloridzin. This opens up the entire field of autointoxication, a subject much too large for adequate discussion here. Indeed, we are scarcely in a position,

owing to our extremely limited knowledge of the identity and chemistry of these poisons, to attempt anything like a complete clinical or experimental demonstration of facts. Under these circumstances it seems justifiable and even necessary to proceed in an empirical manner, and seek what light we can from a clinical study of selected cases. I will therefore offer the following incomplete clinical studies, which, while not sufficiently extensive to be regarded as conclusive, are to my mind suggestive of the marked influence of toxemic conditions upon the clinical picture of diabetes:

Case 1.—Mr. S——, a merchant aged 62, consulted me July 13, 1898, on account of diabetes mellitus, which had been recognized by his family physician about one year previously. The first thing that attracted the notice of the patient was the characteristic syndrome of a craving appetite, unusual thirst, the voidance of an excessive quantity of urine, and loss of flesh, amounting during the last year to forty pounds, the last month showing a loss of about three pounds, this average having been kept up for a year, in spite of the voracious appetite. The daily quantity of urine for some time had been about 4000 cubic centimeters. Slight distress in the stomach and lower part of the abdomen, with troublesome gas formation, had existed for several weeks. The pulse was 102; the tongue clean and slightly red. General debility was marked, and physical and mental endurance was low. There was shortness of breath on slight exertion, and vision was impaired. The heart's action was normal, and there was no enlargement of heart, liver, or spleen—in short, negative findings throughout, with the single exception of some tympanites. His diet has been Graham bread *ad libitum*, meat, fish, and apple-sauce.

Urinalysis: Quantity of urine 4000 cubic centimeters, specific gravity 1039; total solids 363 grammes; reaction acid; urea 1.3 per cent, or 52 grammes; uric acid not estimated. Sugar 6.9 per cent, or 276 grammes; chlorides 1.17 per cent, or 46 grammes; indican .008 per cent, or 320 milligrammes.

Considering the very large quantity of indican as a proof of intestinal putrefaction, I proceeded at once to examine the colon, and found large quantities of mucus, with rich growth of bacteria and protozoa. It seemed to me to be a good opportunity to ascertain whether a gastrointestinal autointoxication might not be in some measure responsible for the symptoms, so I advised thorough disinfection of stomach and intestines. Mechanical attempts at the former were declined, but the patient entered at once upon a course of colon irrigations, abdominal massage, and hydrotherapeutics; at

first daily, and later on alternate days, continuing the treatment for about one month. In order that whatever results were obtained might not be attributed to any other influence, no drugs were given, and the diet remained the same, with the addition of a baked potato twice a day. The result was almost immediate; in two days the sugar had fallen to 168 grammes, the fifth day to 142, the eighth to 112. By this time the indican had been reduced about one-half. The diminution in sugar excretion from this time proceeded more slowly, and at the end of about three weeks had fallen to 40 grammes.

Curiously the polyuria underwent no material modifications, the amount of urine with 40 grammes of sugar being within a couple of hundred cubic centimeters of the original amount.

The improvement in the general condition of the patient was marked. Instead of losing three pounds as in the preceding month, he had gained three, and his general strength and endurance were markedly improved. He was discouraged, however, because of the continuance of the polyuria, and disappeared from view. A letter from his son a few weeks later informed me that the patient was away on a vacation, and was feeling quite well; but no details were given.

Case 2.—Mrs. S——, aged 52, consulted me October 8, 1898, on account of severe paresthesia of both hands and arms, extending up to the shoulders, of about fifteen years' duration, and exceedingly troublesome, much of the time preventing her from sleeping at night. She also complained of pains in the neck, and of a paroxysmal pain in the coccyx, relieved by pressure. She had suffered for years with "sick-headaches," which formerly occurred at intervals of about two to three weeks, but for the last year or so had become more frequent. At the time when the headaches occurred she was very drowsy and felt like sleeping most of the time. She had been for some time losing flesh and strength gradually. Appetite good, could eat almost any kind of food, and had no stomach distress. Had excessive gas formation in both stomach and bowels, which was always worse at the time of headaches, especially when getting over them. Had occasional eructations of bile, which she formerly vomited, but lately regurgitated in mouthfuls. The bowels were constipated, especially at time of headaches, with occasional diarrhea.

The general character of the case appeared to me to be that of a gastrointestinal toxemia. The quantity of the urine was 1500 cubic centimeters, although I found that it was really ranging between

this and 2000 cubic centimeters; specific gravity 1030; urea 1.3 per cent; daily excretion of sugar 140 grammes; indican 300 milligrammes, indicating extensive proteid decomposition in colon. Stomach examination showed with Ewald test breakfast entire absence of free HCl by Gunsberg's reagent; total acidity 25 degrees; alizarin reaction 20 degrees, indicating 5 degrees of combined HCl; biuret reaction absent. Starch digestion good. Reaction with Lugol's solution entirely absent, showing only achroodextrin in solution.

On the following morning, no food or fluid having been taken since previous evening, the stomach was found to contain about 50 cubic centimeters of a dark, grumous-looking, offensive fluid, gelatin cultures of which produced very dark colonies, almost black, liquefying the gelatin and producing gas. The fluid was of course swarming with bacteria, cover-glass preparations showing a long thread-like bacillus.

Examination of the colon revealed a pretty severe mixed infection, with the usual evidences of a chronic catarrhal condition.

It seemed that autointoxication might play an important rôle in the production of the glycosuria; and I determined to test the matter, in the most rigid manner possible, by clinical methods. No drugs whatever were given. The diet was not modified in any manner whatever, not even by the exclusion of cane sugar, which the patient took as usual in coffee, fruit, pastry, etc. She was advised to eat liberally of whatever she pleased, in order, as she was informed, to keep up her strength. Daily antiseptic irrigations of both stomach and colon, with intragastric faradism, abdominal massage, and general hot and cold douches, was the treatment instituted.

Improvement in all the features of the case began immediately. After two weeks of treatment the headaches, the troublesome nervous symptoms in the extremities, and the coccygeal pain had entirely subsided, and have not since returned. The amount of sugar showed an immediate decrease; in about ten days' time it had fallen to about 15 grammes, and the amount of urine to 925 cubic centimeters. The condition of the stomach showed very marked improvement; the quantity of germ-laden nutrient culture fluid in the fasting stomach became less and less, with diminished production of ptomaines and resulting autointoxication. The evidences of stomach disease were still quite marked, but the improvement was so great that the patient desired to go home for a week. This vacation was extended by her to nearly two weeks, during

which time I received specimens of twenty-four-hour collections of urine every other day. During this time both the quantity of urine and the amount of sugar gradually increased, until when she returned she was excreting considerably over 100 grammes of sugar with about 1500 cubic centimeters of urine. The cause of the auto-intoxication, if this explanation could be invoked, was sufficiently obvious when the stomach was examined, as much the same condition that I found at first had been reproduced, only somewhat less severe. Then came a second test of the effect of gastrointestinal disinfection upon sugar excretion. The result was practically a repetition of the first trial. The sugar rapidly fell to 69 grammes in a week, and in another week to 25. Then came a period of a few days during which the symptoms did not improve, but became a little worse. Upon looking into the matter carefully I found that this period exactly corresponded to a change in the time of stomach treatment. I had become weary of hurrying through an early breakfast to take care of a half-dozen stomach cases with digestion rather too slow for midday treatment every morning, and tried to conduct the treatments later in the day, several hours after suitably regulated meals. With some of the cases, in which digestion was not too much retarded, this worked well, but in this case, along with a few others, there was so much food débris that the treatment was unsatisfactory, and disinfection obviously incomplete. This case was again at once placed back to the morning treatment on the fasting stomach, and again the improvement was resumed. The sugar now ranges from 10 to 20 grammes per day; the urine still being moderately in excess (1100 to 1300 cubic centimeters), although this is at least in part and perhaps altogether accounted for by the large quantity of water the patient is directed to drink for the purpose of washing out the toxins from the circulation.

The stomach condition has continually improved until, for some time past, the fasting stomach has been empty and the washings clear, with the exception of numerous mucous flocculi, floating in a clear instead of an opaque medium, which are themselves of course infiltrated with germs and are the evidences of a residual gastritis, which will probably be some time yet in disappearing. Unfortunately intestinal disinfection has only been imperfectly accomplished, owing doubtless in part to the fact that stomach disinfection itself has so far been only partial. Some indicanuria still remains.

I have only reported so much of the details of these two cases as appeared to me necessary in order to show what I regard as the evidence of the effects of toxins in sugar excretion. I am not at all

prepared to say that these toxic conditions were absolutely initial factors in the production of the disease. This is a question for future investigation to settle with reference to a certain group of cases. What appears to me perfectly clear is that the cutting off from the circulation of a considerable quantity of toxic material from the gastrointestinal tract had in these two cases a most remarkable influence upon the glycosuria. Even admitting, what can neither be affirmed or denied, that the gastrointestinal disease was a secondary phenomenon, its influence upon the principal factor of the disease—namely, the glycosuria—still remains of the utmost importance.

Before definitely accepting the conclusion that the diminished sugar excretion in these cases was directly due to the cutting off of toxins from the circulation, there are certain other possible explanations which must be considered. In the first place it is well known that the glycosuria of diabetes is subject to marked and unaccountable fluctuations, and the possibility of a coincidence of such a corresponding fluctuation with the advent of the treatment, with its cessation, and again with its resumption, suggests itself. I do not believe that this is worthy of serious consideration, inasmuch as the results are too regular and constant to be thus explained in the two cases recorded. A large number of observations would, of course, be desirable; but the results were so immediate and direct, and withal so strongly supported by other facts, that the relationship seemed established in these cases, and justified at least a provisional conclusion.

Aside from the gastrointestinal disinfection we have to reckon with the effects of hydrotherapeutic, electric, and massage treatment upon tissue metabolism. This effect is profound, and its importance in producing the phenomena presented in these cases, I am free to admit, may have been considerable. But these general measures of treatment have been repeatedly utilized in numerous cases of diabetes, by myself and others, without striking results. Nevertheless they are in my opinion important auxiliaries, otherwise I would not have used them. In such and all similar cases of severe nutritional disease it is a binding obligation to use every available means for the improvement of general nutrition, and hydrotherapeutics occupies first rank among such means. But these alone do not and cannot fully explain the constant results obtained in these cases.

And, finally, the fact that these two cases belong to a group occurring in the second half of life, of moderate severity, and usually easily managed, is really unimportant so far as my principal contention is concerned. If it is, or can be, demonstrated that

toxins of gastrointestinal or other origin profoundly influence sugar excretion, it raises a question of supreme importance and gives us a hint of at least one direction in which we may hopefully look for a little light on the mystery which envelops the genesis of this disease.

The following conclusions appear to be warranted:

1. That all cases of persistent glycosuria are cases of diabetes mellitus, of varying grades.

2. That diabetes mellitus is a disease of diverse origin, the unity of the clinical picture being for the most part dependent upon the glycemia and glycosuria, which are mere incidents, although dominating factors of the disease.

3. That phloridzin diabetes is not essentially different from clinical diabetes, and that it renders plausible the assumption of a chemic factor, either as a primary or an important secondary cause in the clinical type of the disease.

4. That normal sugar transformation in the blood, the failure of which is responsible for the glycemia and glycosuria, is the result of a chemic product in the blood, derived in man principally if not exclusively from the pancreas, and thrown directly into the blood from the pancreatic cells, without the intervention of the duct.

5. That the direct chemical antagonism of this chemic substance by another is no more improbable than such antagonism of a toxin by an antitoxin, which Martin has recently established.

6. It is probable on both clinical and experimental grounds that certain chemic poisons, for the most part of gastrointestinal origin, but possibly also from faulty tissue metabolism, or as a perverted "internal secretion" from glands, not necessarily ductless, either directly or indirectly antagonize, in whole or in part, the sugar-destroying substance in the blood, thus giving rise to glycemia and glycosuria, and thus either primarily causing or at least exaggerating the clinical phenomena of diabetes mellitus, in a certain group of cases.

7. If further investigations should corroborate the conclusions here provisionally set forth, it would be advisable hereafter to investigate the bacteriology of stomach and intestines in cases of diabetes mellitus, and if evidences of virulent bacterial, protozoal, or parasitic growth are found, these conditions should be met by suitable treatment, not with the expectation of entirely supplanting dietetic treatment, but as an important auxiliary to the latter, possibly rendering its restrictions less severe, with less resulting impairment of nutrition.

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RECTAL INCONTINENCE.

BY J. R. PENNINGTON, M.D., CHICAGO.

Incontinence of feces is a most disagreeable and loathsome condition. It is often so mortifying and embarrassing that it becomes fatal to social and business possibilities. Could you conceive of a condition that would be more deplorable, cause more embarrassment or mental worry than the loss of control over the bowel? There are many causes of this affliction. This paper, however, will refer more especially to those cases following operations for fistula *in ano*. Why the operation is followed by incontinence in some cases and not in others is difficult to say. In some instances a single division of the external sphincter has been followed by this mortifying state, while in others very extensive incisions have been made and the patient recover with perfect control of the bowel. This occasional undesirable result not only fills every conscientious surgeon's heart with much fear, anxiety, and serious apprehension when about to assume such responsibility, but it has given rise to much discussion and to a great diversity of opinion as to why it should occur in one case and not in another. Smith believes it to be due not so much to the division of the sphincters as to the severing of the circular muscular fibers of the lower part of the rectum; Esmarch thinks it due to the division of the nerves supplying the muscles more than to the division of the muscular fibers; while Kelsey holds to the theory that it is due to the vicious cicatrization by which the divided ends of the muscle are not brought into apposition. These are the views of some of the most eminent men in the profession, and doubtless each plays its part in particular cases, yet my own belief is that it is due as frequently to the want of proper technique in operating and inefficient after-treatment as to any other one cause. I say this advisedly, and because this distressing state rarely follows the operation when done by those familiar with the conformation of ano-rectal fistula and skilled in rectal surgery.

In support of the above premises, I will briefly report and elucidate by means of a schematic drawing and photograph the salient points of a complex fistula in a patient referred to me by Dr. Flood in May, 1898. This patient had an extensive horseshoe fistula passing around the bowel posteriorly from the right (R. L.) to the left (L. L.) labia, with two tracks leading off from the main sinus on the left side to the very apex of the left ischiorectal fossa (L. I. R. F.), and another track (Y) leading from the same sinus

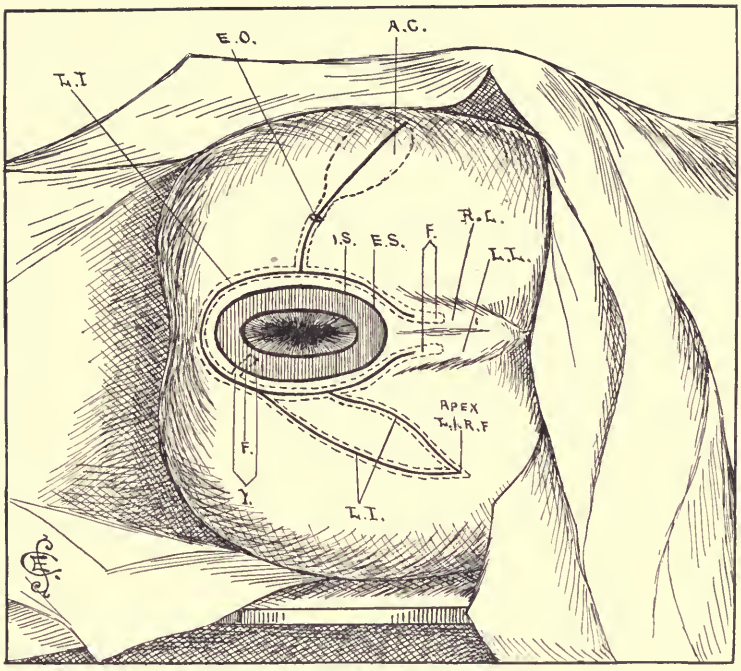


FIG. 1.

under the external sphincter and into the bowel on the same side. This fistula had one external opening only, which was over the tuberosity of the right ischium, and a large abscess cavity (A. C.) external to it. The dotted lines in Fig. 1 represent the fistulous tracks and the abscess cavity, and the heavy lines between these the incisions made. The left ischiorectal fossa was completely divided anteroposteriorly from base to apex; the track Y leading into the bowel was not divided, but curetted and irrigated with a bichloride solution. Necrosis had so completely destroyed the contents of the right ischiorectal fossa and the tissues external to the tuberosity of the right ischium that it protruded almost an inch above the base of the wound. The atrophy of the right hip, as shown in the photograph (Fig. 2), which was taken seven months after the operation, gives a meager idea only of the extent and destructiveness of this fistula. The points I wish to emphasize in this case are:

1. That a very deep incision was made entirely around the bowel from labia to labia, and that both ischiorectal fossæ were divided anteroposteriorly from base to apex.

FIG. 2.

2. That, notwithstanding a track entered the bowel, the sphincter muscle was not divided at all.

3. That by operating in this manner all incisions are made external to the rectum, consequently feces do not come in contact with the wound during defecation, and since it is not connected with the bowel by incisions, can be treated and dressed very much the same as a wound in any other part of the body, a point which seems to me of no little importance.

4. That there is no irregularity of anus or sphincter muscle because of incisions.

5. That the patient made an uneventful recovery and has as good control over the bowel as if no operation had been performed.

I have taken the liberty to record the above case in this connection because it seems so apropos to the above premises and serves to demonstrate that extensive cutting may be indulged, in operations for fistula *in ano*, with no incontinence or unpleasant after-results, when proper technique is observed.

Incontinence of feces is often so mortifying that patients express a desire to die rather than to live. In bad cases flatus is passed without the slightest warning, and the contents of the rectum may be discharged in the clothing before the sufferer can reach the toilet room. It is very gratifying to know, however, that most of these cases can be cured, or made comparatively comfortable at least. In the less severe cases much benefit may be derived from the use of such drugs as kino, opium, and other astringents, and by regulating the diet. It must be remembered, however, in directing palliative treatment that there is a great variation in peristaltic action; some persons defecating two or three times in twenty-four hours, while

others only once in forty-eight to seventy-two hours. In the former the stools are semisolid, while in the latter they are hard and scybalous-like. Hence the control of the feces in a patient with a weakened sphincter may be easy or difficult. There are some which it would be found very difficult to render safe from mortifying embarrassments. I recall the case of a very refined lady of agreeable presence, who was referred to me by Dr. Reeves, of St. Louis, in May, 1897, whose cheerful disposition was changed into one of hypochondriasis and melancholia because she was confined to her bed and had to wear continually a bandage and pad. In this case more than one-third of the external sphincter had been completely destroyed by an operation for fistula, leaving a large cicatrix which not only produced a stricture of the anus, but held it constantly open. In the more severe cases, where operative interference is indicated, the surgeon has ample opportunity to exercise all his surgical ingenuity in devising a plastic operation for relieving this distressing condition, for no two cases will be found to be exactly alike, and the treatment must vary accordingly. In those cases where the remaining segments show signs of contractility, measures looking to their union and restoration of the sphincter muscle are called for, and will be more or less successful. Among these measures may be mentioned:

1. Tait's operation upon the perineum.
2. Application of the cautery.
3. Exposing the cut ends of the divided sphincter and their reunion by sutures.

In performing either of the above operations it is necessary that the patient's bowels be thoroughly prepared for it. This is best accomplished by giving him the second night previous to the operation a cathartic, usually from two to five grains of calomel in broken doses, to be followed the next morning with a dose of salts; then, five or six hours before operating, a colonic flushing. By preparing the patient in this manner the bowels will have been thoroughly moved, and you will have a clean field in which to operate. Should you give the cathartic the night before, and the enema about one hour previous to operating, as directed in the text-books, you will find it to be the rule and not the exception that your patient's bowels move during the operation, which not only makes the work disagreeable and unpleasant, but what is more, your field is rendered septic. Tait's operation, in the main, is performed in the same manner as it is upon the lacerated perineum, remembering, of course, that in this operation the rectum plays the part of the vagina and that the flaps must be turned into it and sutured, and not into the

latter. The application of the Paquelin cautery is more frequently indicated, and as a rule will be followed by more uniform and satisfactory results, than any other method of procedure.

The patient anesthetized, all tabs of skin, lax mucous membrane, and piles, if any exist, must first be removed. Then the cautery point, at a dull-red heat, is applied to each scar and to the sphincter muscle in two to four or more places, according to indications. Care, however, must be taken not to burn too much, as a stricture may follow. The operator must exercise his own judgment, ingenuity and familiarity with the instrument in determining its application. Should there not be sufficient contraction following its first application, the operation may be repeated in two or three months after the first one.

Case 1.—Mrs. H. R——, aged 42, was referred to me by her physician in July last, to be treated for incontinence of feces. Evidently this patient had been operated upon for a horseshoe fistula, as the sphincter had been severed on both sides. This mortifying condition confined her to her home, and rendered her life miserable. Deep burning with the cautery was made in each scar and into the sphincter in three places with a good result.

Case 2.—This patient, Mrs. S——, was referred to me by her physician, Dr. Weber. She was suffering from incontinence following an operation for a small ano-rectal fistula, which evidently had had its external opening near the perineum. In this case the muscle had been divided obliquely, leaving a large patulous opening over which she had no control, and through which feces and flatus continually passed, especially when in the upright position. This laxity was readily relieved by removing the cicatricial mass, which exposed the ends of the otherwise active sphincter, their reunion being accomplished by suture. But when the nerve supply has been destroyed and the muscular segments greatly atrophied and displaced by cicatricial tissue, restoration of the sphincter becomes impossible. This is also true in those cases where the sphincter has been completely or almost entirely removed, as it so frequently is in the so-called "American" or Whitehead operation for hemorrhoids. In such mortifying states the operation devised and successfully performed simultaneously by R. Gersuny, of Vienna, and A. P. Gerster, of New York, which consists in separating all of the coats for two and one-half inches up the bowel, then securing the gut and twisting it upon itself in an arc of 360 degrees, and stitching it to the skin by outer sutures, offers the best hope of success.

COLUMBUS MEMORIAL BUILDING.

DIAGNOSIS OF CHRONIC DIFFUSE PERITONITIS.

BY FRANK X. WALLS, M.D., CHICAGO.

Chronic diffuse peritonitis from a clinical point of view may be classified as simple, tubercular, or neoplastic, not considering other infrequent varieties, such as, for instance, echinococcus peritonitis, etc. Chronic general peritonitis is usually attended with exudation, and in direct proportion to the exudation is the diagnosis involved. In the following discussion the exudative varieties of chronic peritonitis will be considered.

Much discussion has arisen as to the existence of a simple, non-tubercular, exudative peritonitis, though cases have been described as occurring more frequently in children by Strümpell, Henoch, Baginsky, Filatoff, and others. *A priori*, there is no reason why we should deny a chronic simple inflammation of the peritoneum, even though we admit the condition to be infrequent. The disease develops insidiously often after a history of trauma or exposure. Pain and abdominal distention are the most prominent symptoms, attracting attention to the peritoneum. The pain is seldom excessive, arises spontaneously, or is elicited on palpation of abdomen, and is usually diffused over the abdomen, or regions of excessive tenderness may be complained of or revealed on examination. Fluid effusion is usually present, though the quantity varies within very wide limits. The field is usually free, but it may be encapsulated, and if examined after aspiration reveals the characteristics of an exudate. The most characteristic differences, as contrasted with ascitic fluid of non-inflammatory origin, are specific gravity above 1016, albumen in considerable quantity, and an abundant sediment rich in granular leucocytes. Moderate elevation of temperature is often present at the onset, but later the disease usually pursues an afebrile course. Other general symptoms may be present, more especially intestinal, cardiac, renal, or nervous, and vary much in their kind and degree.

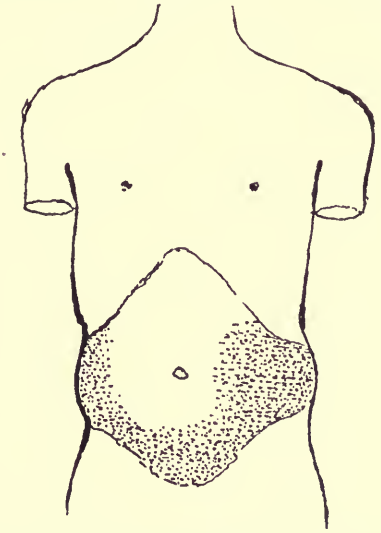
The differential diagnosis should exclude tubercular or cancerous peritonitis and ascites, and this consideration we will defer until a later part of the discussion. Osler and Baginsky have reported each a case of chronic peritonitis in which tubercle bacilli were demonstrated in the lesions during the early history of the disease, but later, when the cases came to autopsy, careful search for bacilli or characteristic tubercular processes by competent pathologists was negative. The deduction is warranted that the absence of bacilli or

tubercles in a chronic peritonitis is no indication that the morbid condition was not initiated by the bacillus of tuberculosis, and also that autoptical negative findings are quite consistent with a previous tubercular infection.

There is no characteristic picture of chronic tubercular peritonitis. At times the diagnosis is evident, while in other cases a laparotomy or post-mortem reveals the presence of a tubercular peritonitis that previously had not been suspected, or had been excluded. Tubercular peritonitis may arise insidiously from a latent pulmonary tuberculosis, from a caseous mesenteric or bronchial lymph gland, from an intestinal tubercular ulcer, from a hidden focus in the urogenital apparatus, more especially testis or Fallopian tube, or from a bone or joint affection. In every case exhaustive examination for a primary focus must be instituted, and its presence or absence is of considerable weight in our diagnosis, as tuberculosis of the peritoneum is rarely, if ever, primary. The usual symptoms that draw our thoughts to the peritoneum are pain, distention of abdomen, and symptoms of gastrointestinal derangement. The pain varies much in its character, constancy, and intensity; usually dull, it may be sharp; frequently intermittent, it may be continuous; as a rule, it is mild, rarely intense. Some tenderness is generally provoked on palpating the abdomen. Vomiting, diarrhea, and meteorism are frequently present, though often mild. Palpation or auscultation might elicit peritoneal rub or friction. The inflammatory effusion may be free or encapsulated; when encapsulated, it may give rise to physical signs of isolated neoplasms in the peritoneal cavity. The palpation of the curled-up omentum, as a hard, firm, elongated, sausage-like body, lying transversely in the epigastric region, is hardly sufficient to correct such an impression, as it is also present in carcinomatous peritonitis, though more frequently in tubercular. Sometimes the thickened omentum is to be palpated only after evacuation of the exudate, and instead of being in the epigastric region it may form a prominent tumor in the right iliac region (Osler). When the effused fluid is free in the peritoneal cavity, the relation of the dulness due to the fluid and the tympany of the bowel, as elicited by percussion, gives rise to a sign described by Thomayer in the *Zeitschrift für Klinische Medicin*, Band 7, 1887. This sign is a very important aid in the diagnosis of chronic peritonitis. In such cases, with the patient in the dorsal position, we do not find the area of dulness symmetrical on both sides of the abdomen, with tympany in the median line, as we find in non-inflammatory ascites, but we notice

that the dulness is much more extensive on the left side, and the tympanitic area greater on the right side. Thomayer reports eight cases of chronic peritonitis, five tubercular, three cancerous, in which this sign was present and was of great value in the diagnosis. The synoptical history of the following case that I saw during the past year will illustrate this sign of Thomayer's:

Male, aged 50; sick seven months. Complained of general weakness, emaciation, distention of abdomen, diarrhea, etc. Examination revealed evidences of an old lesion in the apex of upper lobe of left lung. Circumference of chest, 32 inches. Abdomen distended, greatest circumference being 39 inches. In dorsal position, slight general sensitiveness to deep palpation; abdomen tense. Tympany on percussion existed over anterior upper part of abdomen, and was more extensive on the right side. Dulness over lower part of abdomen and in flanks, much greater on the left side of abdomen (see illustration). Dulness changed slightly with change of posture; evident fluctuation. Inguinal glands on both sides were slightly hypertrophied. Liver and spleen not enlarged. Patient remained under observation for two weeks, during which time he had a slightly febrile course. Ten days after admission to hospital he suddenly developed marked symptoms of dyspnea, and died two days later. Post-mortem examination revealed a large embolus in the pulmonary artery, evidently dislodged from a vein of the lower extremity (marantic thrombosis). Lungs showed an old tubercular lesion about the size of a half-dollar in left apex, made up of caseous material and surrouded by a fibrous capsule.



Area of dulness in chronic tubercular peritonitis. Shaded area dull; light area tympanitic.

Peritoneum contained over six liters of almost clear limpid fluid. The intestines were distended, pigmented black, in places slightly adherent to each other, and lay in the right side of abdomen. Tubercles distinctly visible. Omentum much thickened and shortened, lying immediately beneath the liver. The mesentery was thickened, retracted, and infiltrated with tubercles. Other findings unimportant.

This sign of Thomayer's is readily explained when we consider, first, the anatomical attachment of the mesentery to the right side of the vertebral column, and second, that in chronic peritonitis, especially the tubercular or cancerous, we have a shortening of the mesentery, a mesenteritis retrahens, which pulls the small intestines over to the right side of abdomen, and permits the fluid effusion to accumulate on the left side. This sign is an important one, but we should remember that it is not always present in chronic tubercular peritonitis. As Nothnagel says, it can fail when the retraction of the mesentery is not present, or the relation of dulness and tympany can be the reverse if a large tumor mass should exist in the right abdominal cavity. Early adhesions of the intestinal loops to the parietal peritoneum might prevent the development of this sign. Nevertheless, the sign is a valuable one, and when used with circumspection may be of great aid in the diagnosis of chronic peritonitis.

At times there is thickening and ulceration of the intestinal loops (peritonitis deformans), and the bowels may be palpated as a firm, hard tissue against the spine. The mesenteric glands may be involved and be readily palpable as tumor-like masses in the peritoneal cavity (tabes mesenterica). Sometimes irregular areas of tympany and dulness are to be recognized, that depend upon encapsulation of exudate between the intestinal loops. Irregular, so-called "doughy," masses may be palpated. When the peritonitis is accompanied by a bilateral pleurisy and pericarditis (polyserositis tuberculosa), the diagnosis is usually evident. Examination of the exudate for tubercle bacilli, or injection of the same into susceptible animals, might aid in differentiating the tubercular from the non-tubercular varieties of peritonitis, as would also systemic reaction after the injection of Koch's tuberculin.

Ascites (hydro-peritoneum) and ovarian cyst, perhaps more often than other conditions, are to be considered in the differential diagnosis, and the not infrequent association of chronic peritonitis with cirrhosis of the liver is to be borne in mind. The essential diagnostic points between the different varieties of chronic peritonitis and allied conditions are presented in the following schema:

	CHRONIC PERITONITIS.			Ascites.	Ovarian Cyst.
	Simple.	Tubercular.	Carcinomatous.		
Age.	Young, may be adult.	Adult, may be young or old.	Over 35–40.	Adult, or may be young or old.	Adult.
General health.	Frequently good before onset.	Usually poor.	Cachexia.	Variable, depending upon causal conditions.	Frequently good.
Etiology.	Trauma, exposure.	Tuberculosis in other organs.	Cancer in other organs.	Portal vein, hepatic, cardiac or pulmonary disease; rarely renal.	?
Gastrointestinal symptoms.	Frequently present.	Usual.	Constant.	Inconstant.	Absent, unless complicated.
Pain.	Slight.	Slight.	Slight, may be severe.	Discomfort.	Discomfort only.
Temperature.	At onset.	Afebrile, though often hectic symptoms.	Variable, usually afebrile.	Absent.	Absent.
Shape of abdomen.	Symmetrical.	May or may not be symmetrical.	May or may not be symmetrical.	Symmetrical.	Frequently asymmetrical; no bulging in flanks in dorsal position, as we find in effusion into peritoneal cavity.
Spleen.	Not enlarged.	Not enlarged (unless lardaceous or tubercular splenitis).	Not enlarged.	Always enlarged.	Not enlarged.
Thomayer's sign.	Infrequent.	Frequent.	Frequent,	Absent; upper border of dulness concave upward; line wavy.	Absent; upper border of dulness convex upward; line is straight.
Examination of fluid, specific gravity.	1014+	1014+	1014+	1012—	1020+
Albumen.	Abundant,+3 per cent.	Abundant,+3 per cent.	Abundant,+3 per cent.	Little,—2 per cent.	Little.
Color.	Rarely clear, cloudy.	Cloudy, flaky, hemorrhagic.	Cloudy, flaky, hemorrhagic.	Clear.	Clear, cloudy, frequently gelatinous.
Microscopic examination of sediment.	Considerable sediment; granular leucocytes.	Sediment abundant; pus cells, blood; tubercle bacilli (rarely).	Sediment considerable; pus cells, blood; cancer fragments (rarely).	Little sediment.	Sediment varies; ovarian cells, cylindrical cells.

The symptomatology of cancerous peritonitis is very similar to that of chronic peritonitis, and the diagnosis is to be made, as a rule, after determining a primary carcinoma. When the primary tumor is evident, these cases present no difficulty in diagnosis, but when the cancerous peritonitis develops upon a latent cancer of the stomach, bowel, or ovary, the diagnosis may be extremely difficult. In every case careful examination of the stomach (physical examination and chemic analysis of the stomach contents), as well as digital exploration of the genital organs and rectum, is to be made. The age, cachexia, determination of multiple tumors in the abdomen, in addition to the other evidences of peritonitis, are the usual criteria of chronic cancerous peritonitis.

Chronic peritonitis, simple, tubercular, or cancerous, clinically might be simulated by a greatly dilated stomach (Leube), or distended urinary bladder, but in a given case could easily be excluded by aid of stomach-tube or catheter.

THE THERAPEUTIC VALUE OF MARMOREK'S SERUM.

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In all therapeutic discussions the value of a given procedure is determined by three elements—the strength of the agent, the constitution of the individual upon whom it is to be used, including the etiologic moment, and the specific conditions and complications occurring at the time when the therapeutic agent is employed. By serum-therapy we understand the blood or blood-serum of an individual, artificially immunized against an infectious disease, is used to render another, no matter how susceptible to the disease in question, immune to it.

Naturally the importance of the disorders produced by the erysipelas streptococcus in man, either alone or associated with other bacteria, led to attempts to secure an antistreptococcic serum. Marmorek states that animals have been immunized against streptococci to determine whether the resultant serum be preventive or curative. Until recently the results have been inconclusive, as the serum has been too weak, and much less active than that used against the diphtheria bacillus, or even against the pneumococcus.

The essentials in the production of a curative serum depend upon the injection of large amounts of very virulent cultures or of any active toxin into immunized animals. Hitherto experiments upon the streptococcus have demonstrated the extreme variability of its virulence and its activity. Even very virulent streptococci soon weaken in any artificial medium. By passing the streptococcus frequently through the rabbit, Marmorek obtained a virulence so extraordinary that one one-hundred-billionth (0.000,000,000,01) of a cubic centimeter of the culture hypodermically injected into a rabbit kills it in thirty hours. Not only did Marmorek succeed in securing this virulence, but he also was able to control its variability. Through it he was able to secure a serum, to which has been ascribed the preventive and curative effects which I propose to discuss.

The communication to which reference has just been made was discussed by the Paris Biological Society February 23, 1895. One month later Marmorek stated before the same society the results of his immunization of solipeds and ruminants against streptococci of extreme virulence. The serum of the animals immunized possessed preventive and curative properties. Marmorek thought the

moment opportune to test the effects of such serum in streptococcic infection in man. Erysipelas was chosen for the test, as a typical streptococcic infection. Did this test succeed in the case of erysipelas the serum would, as Marmorek remarks, be logically applicable to the treatment of pure or mixed streptococcic infection. The first tests of the serum were made under the supervision of Chantemesse. The serum was applied in fifty-six severe cases, in many of which the prognosis was grave. With one exception, a 62-year-old pneumonic woman, who died ten hours after the injection, the patients recovered. In the one fatal case a prior infection by the pneumococcus was demonstrated. In all cases the temperature rapidly fell after an injection of from five to twenty cubic centimeters of the serum. There was marked general improvement at the same time. When albuminuria occurred, it was but transitory. Not only did the patients recover rapidly, but abscess complications did not appear. These complications had been very frequent in the same class of cases treated before the days of orrhotherapy. In Marmorek's opinion virulence and toxicity of the cultures injected into the immunized animal are indispensable for the production of a reliable serum.

These results of Marmorek and Chantemesse did not escape severe criticism. Bolognesi, for example, questioned the selection of cases, claiming that severe ones were not chosen.

Jacquot, of Creil, France, reported a case of puerperal septicemia successfully treated with the Roger-Charrin serum in May, 1895.

Charpentier, before the French Obstetrical Society, April 10, 1896, reported forty cases of puerperal infection in which antistreptococcic serum had been used. Of these, seventeen died, a mortality of 42 per cent. Of these seventeen, five were *in extremis* when the serum treatment was used. In twenty-five of the forty cases a bacteriological examination was made; in sixteen of these streptococci only were found. There were nine recoveries and seven deaths. In nine the streptococcus was associated with the staphylococcus or bacterium coli; among these there were four deaths and five recoveries. In no case was there exclusive reliance upon the serum, antiseptic intra-uterine medication being also employed.

Charpentier found as untoward effects urticaria, erythemata, pruritus, and more or less alarming nervous accidents. Goulard regarded the serum as the cause of death in one fatal case. In his opinion the results are by no means encouraging, and he contests the efficacy of the serum.

Bar and Tessier reported nineteen puerperal cases in which

Marmorek's serum was used. There were nine recoveries and ten deaths. Three of the latter were very low when treatment was begun. The remaining seven cases were not especially severe. Roger's serum was used in six cases, with five deaths. In their opinion the antistreptococcic serum which has given such good results in the erysipelas of adults at the Aubervillers Hospital is wholly without efficacy in erysipelas of the new-born. Four cases were treated, with four deaths.

Gonin reports one case of facial erysipelas treated with serum, with recovery. The temperature reached 104.5°. Guaiacol and glycerin, 1 to 5, was used before the serum.

Rapporte reports the use of antistreptococcic serum, containing 0.5 per cent of carbolic acid, in sixteen cases; four of these were mild infections. In his opinion the serum prevented aggravation of the infection. In two cases of severe type the serum did not exert much influence; both patients died. In the other twelve cases in which the serum was given for the purpose of overcoming the symptoms, no less than ten succumbed. The serum did not influence the temperature. He concludes that its use is unsatisfactory.

Baginsky reports results in forty-eight cases of scarlatina between October, 1895, and March, 1896, in which Marmorek's antistreptococcic serum was employed. In twenty-seven the course of the disease was unusually favorable, the majority recovering without complications. Only four were attended with suppurative otitis; one with mild nephritis; in two others severe angina developed; in one case acute and painful glandular enlargement followed the injection, but recovery ultimately followed. A striking feature in all was the rapid reduction of temperature. In exceptional cases albuminuria appeared, and a single case had nephritis with tube-casts and blood-corpuscles. In a second group of cases of a severe type the results were not so favorable, although it is possible that in these the amount of serum employed was insufficient. Among the whole number of cases there were seven deaths, or 14.6 per cent, which compares favorably with the percentages (between 22.6 and 34.4) in the years from 1890 to 1895. The mortality among cases treated by other means during the same epidemic as that in which the serum was employed was 24.9 per cent. The untoward effects of the injections were similar to those observed after injections of diphtheria antitoxin.

Josias reports ninety-five cases of scarlatina treated with Marmorek's serum. The mortality was not lessened. There was apparent relief of anginose symptoms and a quicker disappearance

of non-suppurative glandular swellings. There was no influence on existing suppuration, albuminuria, or temperature.

Among the complications not considered serious were abscesses at the site of injections, erysipelas, exanthemata, lymphangitis, and purpura. The results were not very favorable.

In Bulloch's opinion the effect of antistreptococcic serum is slight compared with that of the antidiphtheritic and antitetanic serums. Animals should be treated at least a year to get it in its highest power. For puerperal fever ten cubic centimeters should be injected on each side of the abdomen, and if there are no results ten to twenty cubic centimeters additional should be used. In "streptokokkenbrame," ten cubic centimeters may be injected. The value of the serum will remain uncertain until a diagnosis can be made between strepto- and staphylo-mycosis.

Petruschky comes to the following conclusions regarding the value of the serum:

1. New data as to the virulence of streptococci are not shown in Marmorek's work.

2. No immunity against infection either with Marmorek's streptococcus, or with two very virulent samples, for rabbits, was produced by the serum from Paris or from Lyons in experiments on animals.

3. This serum cannot be recommended for therapeutic experiments on man.

4. A reliable proof of the possibility of a protective serumtherapy against streptococcus infection has thus far not been given.

Bonome and Viola, of Padua, claim to have produced by high-tension alternating currents an effective antitoxin from virulent streptococcus cultures. It acts *in vitro* and *in corpora.*

Chantemesse recommends serotherapy by enemas. He claims good results from this procedure in erysipelas.

Merry isolated a streptococcus from the blood of a scarlatinal patient that seemed absolutely resistant to Marmorek's serum.

Marmorek treated ninety-six cases of scarlatina in the Trousseau Hospital, in seven of which diphtheria bacilli also existed. Four of them died. Of the remaining ninety-two, one died of double pneumonia. The rest recovered. The scarlatina followed its usual course. He concludes that it was not due to this special streptococcus, but believes the serum had a favorable influence on the glandular enlargements and the nephritis.

Schenk agrees with Petruschky as to the inefficacy of Marmorek's serum.

Belfonti and Carbone believe that they have established the fact that the antistreptococcic serum only protects against infection by the same variety of streptococcus with which the animal from which the serum has been obtained was immunized. This would raise the question in each case as to the variety of antistreptococcic infection.

W. Bulloch experimented with two streptococci, one from erysipelas of moderate virulence, and the other extremely virulent from an abscess. He immunized a horse after Marmorek's method with the milder course, which was and remained pyogenic with the virulent coccus without producing suppuration. The experiment demonstrated that (1) the degree of virulence marked by a streptococcus in its passages through an organism is variable, and (2) that an animal immunized to erysipelas coccus is also immune to pus coccus.

Bordet discusses the action of serum on guinea-pigs. Recovery is solely due to phagocytosis. The streptococci were surrounded and made inoffensive before they had lost their virulence. The peritoneal exudate in which the streptococci had been englobed killed a rabbit in less than twenty-fours hours. In rare cases guinea-pigs apparently recovered from streptococcal infection, but relapsed, probably on account of some specially resistant form of the germ.

The Marmorek serum seems to have a negative chemiotactic action that prevents the cocci being fully taken up by the cells. It is strongest in new cultures, and is due, it seems, to the cocci themselves, not to the containing liquid. Relapses, rare in the guinea-pig, are more frequent in the rabbit and more certainly fatal.

The antistreptococcic serum presents *in vita* no special bacteriological power; to give it this power additional factors must be furnished by the organism. These are found in the appearance of phagocytosis only in case of small doses of virus, and late when the proportion of the virus is greater. Cure depends upon the complete englobement of the cocci. Injection of virus into the blood of protected animals showed little proliferation of cocci. They generally died in a few days. There were recurrences in the liver, spleen, bone, medulla, and especially in the lungs. Subcutaneous inoculation is best borne; that in the aqueous humor is dangerous.

Denys and Leelif have shown by subcutaneous injections in the ear that the immunity is due to phagocytosis. The microbes in subcutaneous injections of the virus do not pass into the blood and the lymphatics play an important part in the defense.

Lilienthal, in an article entitled "Serum-therapy in Acute Sur-

gical and Infectious Diseases," reports twelve cases in which Gibier's serum was used with apparently good results. He noted no ill effects except urticaria in some cases, and believes that the remedy is well worth trying, though never to the exclusion of legitimate surgical measures.

Cox reported two cases of erysipelas in which 260 cubic centimeters of the serum was given. One case of diphtheria with mixed infection and one case of scarlet fever were treated. One case of tuberculosis with mixed infection received ten cubic centimeters. In all of these the serum acted favorably.

In a paper read before the 1898 meeting of the American Gynecologic Society, H. D. Fry, of Washington, D. C., specially analyzed eighty-three cases treated by himself and others with the serum. Utility was doubtful in sixty-five cases. In ten cases good results were reported, and in eight none were obtained. Relapses were common. In fatal cases attributed to the serum, collapse, rapid pulse, subnormal temperature and uncontrollable vomiting resulted. He cited 119 cases in all, with 35 per cent of recoveries.

R. F. Wier used Marmorek's serum in six cases of the following types: The first was a case of iliolumbar abscess of tubercular origin. There were few tubercle bacilli found. Streptococci and staphylococci were present. On the fifth day after operation the temperature rose from 99° to 103°. After the use of the serum the temperature fell to 99°, but rose again to 102°. After an analysis of this case Wier thinks the serum had no influence on the recovery. In a second case of chronic suppurative femoral osteitis, with secondary involvement of the knee-joint with the presence of streptococci, the serum had no effect on the temperature. After amputation the patient recovered. The third case was one of breast amputation for carcinoma with secondary infection by streptococci. The serum was without effect and the patient died. The fourth case was one of compound fracture of the thigh. There was sepsis and pneumonia with lobar abscess. The serum was without effect, and death resulted. In the fifth case there was wide-spread suppurative peritonitis from appendix perforation. Two injections of serum were made without effect. Death resulted on the same day. The sixth case was nearly identical in course and result.

It must be admitted that in these cases severe constitutional disorder existed other than those due to the streptococcus; hence they can hardly be regarded as fair tests of the value of the serum. The following conclusions of Wier may be regarded as fairly judicial:

1. That antistreptococcic serum of Marmorek is of value in erysipelas, and probably in scarlatina.

2. That it is yet to be shown to be valuable in puerperal septicemia. The present trend of opinion is against its efficacy in such infections.

3. That it is worthy of further tests in cellulitis, osteomyelitis, and surgical peritonitis not uterine. The dose should be increased from 60 to 100 cubic centimeters per day.

In all twenty-two cases have come under my observation in which the serum was used. Of these nineteen were cases of erysipelas; one of erysipelas plus tubercular nuchal glands; one of facial erysipelas during childbed without septicemia; and one of erysipelas with puerperal septicemia and double labial abscess. The last was the only fatal case.

In four of the cases of erysipelas only one injection of the serum (10 cubic centimeters) was used, with a reduction of temperature to the normal within twenty-four hours; no relapse. In six others four injections of ten cubic centimeters each were given upon consecutive days with rapid recovery on the fifth day; no relapse. In three the injections were followed by reduction in temperature within twenty-four hours, but relapsed at intervals of from three to six days. In all of these cases the serum was again used, in one case four, and in two cases three, more injections being used. In one repeated injections seemed to exercise no effect upon the temperature, and the treatment was followed by sponging, which seemed more effective. The others were old cases in which there had been a marked tendency to relapse; in these not only was the temperature reduced, but the cases showed rapid improvement and recovery.

During this time we had many other cases of erysipelas under treatment at the hospital, but an effort was made to select those cases which were characterized by high temperature or complications.

The antistreptococcic serum used was supplied by Parke, Davis & Co., and is made by the following procedure: Cultures are made of the streptococcus pyogenes from cases of puerperal fever, erysipelas, pseudodiphtheria, etc. These cultures vary greatly in virulence; consequently it is necessary to exalt the virulency of the germ by passing it through small rabbits. At first it will be found that possibly one cubic centimeter is sufficient to kill rabbits two months old in twenty-four hours. As soon as the first rabbit is dead a culture is made, and a second rabbit inoculated, repeating this process until a very minute quantity of the germ proves fatal to rabbits. Indeed, at the present time they have in their laboratory a culture of streptococcus pyogenes so virulent that one ten-trillionth (.000,000,000,000,1) cubic centimeter is sufficient to kill full-grown rabbits in twenty-four

hours. This is many times as strong as any culture heretofore reported. It has been found that the streptococcus pyogenes does not produce a very virulent toxin—that is, it is not dissolved in the culture fluid in which the germs are grown, so that it has been found best in producing immunity against this germ to inject attenuated cultures, introducing gradually subcutaneously into the animal cultures of less and less attenuation, until finally the animal is able to withstand the strongest cultures. Injections are made at intervals of from five to seven days. It requires nearly or quite one year to give the proper degree of immunity. In some instances even a longer time is necessary.

The rapidity with which immunity is conferred varies with different animals. When the animal is able to withstand large quantities of full virulency, the blood is withdrawn from the jugular vein under strict antiseptic and aseptic precautions into sterilized tubes. The blood clots within a few minutes, and is then placed in a refrigerator, where it is kept for about two days. At the end of this time it will be found that a large portion of the serum has become separated from the clot. This serum contains the unknown principle, and is called antistreptococcic serum. This is withdrawn from the tubes with sterilized siphons into sterilized bottles, and 0.4 of one per cent trikresol added, after which the serum is allowed to stand for several days in a refrigerator. Then a bacteriological examination is made to prove the sterility of the product. It is filtered through sterilized filters, which takes out any precipitate that may have been formed by the action of trikresol. The clear filtrate is again tested bacteriologically, and if found free from germs it is put in hermetically sealed glass bulbs, under the most careful aseptic precautions, in a bottling-room to which filtered air is supplied. After the bulbs of serum are completed, two are examined bacteriologically in order to find out whether any germs have accidentally gained entrance. If no signs of growth occur the serum is ready for use.

No satisfactory method has yet been devised for determining the strength of antistreptococcic serum. The degree of immunity conferred upon or shown by animals that produce the blood from which this serum is obtained is the criterion for judging of the antitoxic strength of the completed product.

The deductions I should draw from the preceding analysis of the literature and my own experience are:

1. In pure streptococcic infections the serum undoubtedly exercises a favorable influence on the course of the disease.

2. In mixed infections the influence of the serum was demonstrable, but it merits further trial as an adjunct to other treatment.

3. Considering the grave character of complications of non-streptococcic nature reported, ordinary rules of therapeutics would demand that in such cases, as with the diphtheria antitoxin, all indicated therapeutic procedures must be employed, as well as the serum.

4. In view of the fact that erysipelas streptococci and phagocytes often exist side by side in the lymph channels, it is fair to assume that the influence of the serum is directly exerted bactericidally on the streptococci and not entirely through stimulation of phagocytic action.

5. The initial dose in all cases should be twenty cubic centimeters, to be followed by ten or fifteen cubic centimeters, according to the indications, each twenty-four hours.

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A CASE OF NEURITIS IN THE EARLY STAGES RESEMBLING TETANUS AND HYDROPHOBIA.

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It is seldom that one is called upon to make a differential diagnosis between such seeming divergent affections as tetanus, hydrophobia, and neuritis, but that such becomes possible under certain peculiar conditions may be proved by the case herewith appended. Before presenting the case, and for the purpose of study, it may be well to group the characteristic symptoms of each disease in parallel columns. (See opposite page.)

Having before us the symptom-complex in each of these diseases, it would appear at first sight not difficult to bring one or the other of them under a proper heading and thereby seize upon the diagnosis. However, it is frequently impossible to procure a complete and continuous history in many cases. Direct questions are unconsciously evaded by the patient, in an attempt to introduce a new train of ideas which have no bearing whatever upon the question in point, and persistent effort to obtain the information desired may lead to open rebellion.

A patient, American, 45 years of age, presented himself with the following history: The father and mother were living and in good health; no history of any member of their family having been afflicted with loss of speech and hearing as was this patient. Has several brothers who are deaf-mutes. Patient had three children, all deaf-mutes, their mother also being similarly afflicted. He seemed to be moderately well educated. His personal history was that he had never been sick before; denied all venereal infection. There were no signs of syphilis; no evidence of hysteria was brought out in the history, which was carefully taken. For the past few months he had been employed in a carpet-cleaning establishment, his special duty being to sew the pieces together and to aid in laying them on the floor. Would frequently stick tacks in ends of fingers and gluteal region. The work was frequently tedious, and often some diversion was obtained by cutting wood. Patient stated that he would occasionally sit on a floor under which an engine was placed. This exposed him to excessive heat and caused considerable perspiration with consequent wet clothing, which he did not change. Had been employed in this manner until time of being taken sick. Two years previously he was run over by a carriage, which broke two ribs on left side.

TETANUS.	HYDROPHOBIA.	NEURITIS.
1. History of wound other than from bite of animal.	1. Positive history of bite of animal.	1. History negative.
2. Short period of incubation.	2. Long period of incubation.	2. Negative.
3. Onset marked by rigidity of muscles of back of neck and jaw, and difficulty in swallowing. "Sore throat" is common (Gowers).	3. Onset marked by pain in wound radiating upward. Increased amount of viscid saliva.	3. Onset frequently sudden, pain radiating through nerve branches, having a burning, boring, or darting character, worse at night. Frequently redness along the course of nerve trunk, and sometimes edema. Tingling and hyperesthesia are common. Muscles show reaction of degeneration and wasting.
4. Gradual increase in tonic spasm of masseter muscles. Angles of mouth drawn downward and outward, giving rise to risus sardonicus.	4. Sense of constriction and spasm of muscles of deglutition, but no rigidity of masseter muscles.	4. Gradual increase in pain over nerve trunks.
5. Muscles in back of neck in tonic spasm causing opisthotonos.	5. Muscles of pharynx in a state of clonic spasm, causing a short quick inspiration. Opisthotonos rare.	5. Negative.
6. Muscular spasms increase occasionally from paroxysms of pain excited by movement of a limb or external irritation.	6. Paroxysms induced by administration of liquids or by visual impressions, such as looking at a glass of water, reflection of a strong light, sight of a dog.	6. Localized pain constant, worse at night.
7. Abdominal muscles contracted and extremely hard.	7. Abdominal muscles normal except during convulsions or paroxysms of vomiting.	7. Negative.
8. Respiratory movement limited, thus causing increased frequency.	8. Respiratory movement quickened, afterward leading to inspiratory effort (or forced inspiration).	8. Negative.
9. Temperature frequently normal until late in the disease, when there is a rise of 3° to 5° without remission. In rare instances the temperature may be very high and so remain for several hours after death.	9. Temperature same as in tetanus.	9. Temperature normal or slightly elevated.
10. Mental functions remain normal to the end.	10. Mental symptoms very characteristic and seem to arise from influence of suggestion, manifested by a seeming horror of water and of dogs. Actual delusions arise, and hallucinations and mania are common. Mental symptoms variable, at one moment in a state of frenzy, imitating the barking and biting of a dog, the next moment tranquil and apologetic.	10. Mental functions normal.
11. Symptoms acute or chronic. Death from asphyxia.	11. Symptoms acute. Death from asphyxia.	11. Symptoms more or less chronic. Death (rare) from exhaustion.

On September 9, while in the yard, a horse bit him on right side in posterior axilla. At the time he wore an overshirt and undershirt. The wound, which was only an abrasion at the beginning, subsequently suppurated for a day or two. On September 29 he felt well, but on the following day felt extremely tired and began to suffer with pain in upper cervical region, and also in upper dorsal region (over spinal column), spasmodic in character and "shooting upward." The pain was so severe as to rouse him from sleep and cause him to grasp head with both hands in order to hold it rigidly. Patient seemed to be in extreme agony at time of presenting himself for treatment. The following day, October 1, these latter symptoms increased in severity and the appetite failed. On this day patient observed that he was unable to swallow solid food without producing severe pain. This pain was first described as being located in the back of the neck, afterward in thyreoid region. Was able to chew foods, but not to swallow them. October 2 symptoms became worse. Slept well on September 30 and October 1; slept well on night of 2d of October, but not on 3d, on account of gradual increase in the severity of the symptoms.

Patient does not think he had fever previous to October 2. Thinks he had slight fever on the 3d and 4th. October 5 was the worst day of all. At this time the paroxysms would come on every hour or two, being so severe as to cause extreme agony, and he could not remain still. He would voluntarily grasp his head on either side so as to lessen its movement. The spinal column was very rigid, and pressure of fingers over cervical and upper dorsal regions elicited acute pain, as evidenced by distorted countenance.

On night of October 3 restless sleep of probably six or seven hours; on night of 4th slept an equal length of time. The cicatrix was reddened and pressure over the area gave rise to pain.

October 5, at 1 P.M., patient was given 6½ grains phenacetine, which relieved the pain, and he slept from 2 P.M. until 6 P.M. Pain in back of neck then came on again. The throat was examined, but there were no evidences of congestion or irritation; in fact it presented an anemic appearance. "Hydrophobia" had never been mentioned to the patient.

October 12 examination of urine showed amount about normal; color light amber; odor faint; reaction acid; specific gravity 1020; no albumen nor sugar; no indican. Microscopically a few crystals of uric acid and of urate of sodium with granular débris were found; no blood, no oxalates, no phosphates, no casts.

October 7, 8 P.M., patient felt greatly improved. Could now

nod the head without much discomfort. Only pain in cervical and upper dorsal region (to fourth or fifth). The most tender spots were found on pressure over first four cervical vertebræ. Could swallow without producing pain. In the morning of the previous day the pain was greatest on pressure over left splenius capitis, trapezius and levator anguli scapulæ muscles, but in the afternoon it had shifted over to right side, affecting the corresponding group of muscles. The sternomastoid muscles were never involved. At 8 P.M., on examination, patient did not complain of pain in either region, but only pain on pressure over cervical and upper dorsal regions, greatest in region of first or second cervical vertebra. Patellar reflex absolutely lost on right side and greatly diminished on left side. Two days later these reflexes had approached the normal on both sides. The pupils had always been normal. Had perfect control over both bowels and bladder.

October 10 patient felt well and desired to go back to work. There had been no rise of temperature since coming under treatment, and the patient had always been able to sit up. He was allowed to do so to prevent despondency.

The treatment consisted in the administration of 6 grains phenacetine every four hours, and later 15 grains of potassium bromide with chloral every four hours. He was discharged cured October 12.

SOME PRACTICAL CONCLUSIONS IN THE TREATMENT OF DRUG PATIENTS.

BY J. M. FRENCH, M.D., MILFORD, MASS.

An experience of several years in the treatment of drug *habitués*, so-called, has convinced me that in all cases of any considerable standing the disease to be treated includes much more than the habit of drug-taking, and the breaking up of the habit is not the cure of the disease. In order to be in any measure complete, this must include three stages:

1. The stopping of the drug-taking. This deals with the habit only. The removal of the morbid cause, in this as in most other diseases, is the first condition of cure. But though of prime importance, it is only a beginning. Even though the drug be stopped, there is great danger of a return to its use, unless the first step is followed by another, namely:

2. The overcoming of the drug-craving. The tendency of all drugs of the class now under consideration is to create a morbid appetite or desire for their continuance. Unless this is removed it will in the end almost certainly lead its victim to return to the use of the drug which he had abandoned. The history of temperance reform has shown how universal is this law. The man who practises total abstinence while fighting the desire may be a reformed man and entitled to all credit as such; but he certainly is not a cured man. But even when the drug is stopped, and the appetite removed, except in slight and recent cases, the work is not done. There yet remains the most difficult portion of the task:

3. The removal of the drug effects. The morbid effects of the continued use of the drug must be gotten rid of and the system restored, in some measure at least, to a normal condition before a cure can be claimed. A drunkard who is suffering from alcoholic neuritis is uncured, and one who has advanced cirrhosis of the liver is incurable, though in either case he may cease his drinking, and even lose his desire for drink. A narcotic *habitué* whose indulgence in opium has brought on loss of sexual power is uncured while this condition continues, though he may not have taken opium for months or even years. The restoration of the system to a normal condition is the essence of cure; all the rest is preliminary and partial. We must not, however, forget that in this as in other diseased conditions it is not always, or even often, that a perfect cure can be effected, but that we are frequently obliged to be satisfied with partial restoration to health.

No serious case of any drug disease can be treated to the best

advantage except in a hospital, sanitarium, or retreat, specially fitted up for the purpose, where the patient can be under the care and control of physicians and nurses having a special knowledge of his disease and experience in its treatment. It is impossible to treat such a case properly at the patient's home, or where he is surrounded and cared for by his personal friends. This may be considered a strong statement, but I make it without hesitation. In the first place, no such patient can be trusted to carry out even the plainest directions in the absence of the physician; and this not because of any inherent depravity in the man, but because the effect of the drug has been to make him in greater or less degree irresponsible. If the case has not progressed far enough to produce this result, then it is not a serious case, in the sense in which I am considering it. It does not follow, however, that either the patient or his friends recognize this fact. Indeed, they will both probably deny it — the patient almost surely so. Nor can his friends be trusted, except in very rare instances, to carry out these directions, for they are likely to be influenced by his appeals, out of pure kindness of heart. But even if they could be trusted implicitly, they have not the knowledge which is necessary. Drug diseases are unlike all others and require different treatment and care. Until recently they have received no attention in schools or text-books, and the family physician does not wish to assume their care, knowing it to be something entirely outside his experience.

Nevertheless, it would be going too far to say that no one can be cured who cannot command the resources of a sanitarium. With a faithful physician, judicious friends, and a patient who honestly desires to be cured, much may be done even at home, and under circumstances in some respects unfavorable. Quite recently I have had the oversight and directed the treatment of a very serious case of morphine addiction, at the home of the patient, under circumstances such as I have named, with results which were finally satisfactory, but much less speedily and easily secured than would have been the case in a well equipped sanitarium.

The cases which I have designated as drug diseases may be broadly classified as alcoholics and narcotic *habitués*. Between the two classes there is a broad line of demarcation, both as to symptoms and in the manner of treatment. The alcoholic needs close watch and vigorous treatment for a few days. Then, if properly managed, the worst is over; the craving disappears, despair is succeeded by hope, and discouragement is followed by enthusiasm. But the way of the narcotic *habitué* under treatment is beset with difficulties from the beginning to the end. Snares and pitfalls are on every side. In

addition to the strictly medical treatment, he requires constant companionship, sympathy, and encouragement. He must be handled with gloves, but there must be an iron hand beneath the glove. Months of abstinence and apparent health are often required before his mental balance is restored and his physical soundness assured. Not until at least a year has passed, under favorable circumstances, is it safe to look upon him as really cured, and to expect that his cure will be permanent.

Notably among all the professions, physicians are the most prone to the use of narcotics. Or it may be that they are more anxious than others to be freed from their bondage, and so come more often for treatment. Certain it is that in the statistics of most institutions for the cure of narcotic *habitués*, physicians form a larger proportion than any other single class.

The remedies used in the treatment of drug *habitués* vary according to the conditions to be overcome and the objects to be attained. In alcoholics, for the purpose of toning up the system of the drunkard to such a pitch that it will no longer demand alcohol, for eradicating the cravings of the diseased appetite, and even of replacing it with a sense of disgust, strychnine stands *facile princeps*. To attain this end it is best given both hypodermically and internally, to the extent, all told, of one-fifth or one-fourth of a grain per day. When given internally it should be combined with other remedies to modify its action and play important but subordinate parts, such as acting upon the bowels, liver, and kidneys, and lessening the irritability of the nervous system. The advantages of hypodermic use are: (1) that a more immediate, direct and positive effect is secured thereby; (2) that it brings the patient under the eye of the physician at frequent intervals; and (3) that it enables him to vary the dose and even the composition of the remedy used without the knowledge of the patient. The majority of patients, when treated in this way, lose all desire for drink within a few days. Only occasionally is there a hard case met with, who is resolved to drink as long as he can, and in which it becomes necessary to substitute one-tenth of a grain of apomorphine for the usual strychnine injection, at the time of taking a drink. The effect of this is only temporary, and has nothing to do with the real cure of the disease. Not so with the strychnine, however, whose effects are as positive and permanent as can be secured from any drug. Indeed, it comes very near to being a specific for alcoholism. A good illustration of the positiveness of its effect was furnished by a patient whom I treated in the summer of 1877. He was a professional man, 40 years of age, who had been drinking almost continuously for six

months, during which time he had suffered from several attacks of delirium tremens, as he also did during the first seven days of his stay with me (see *American Therapist*, November, 1897). Two weeks after his recovery from this attack he expressed a strong desire to make a trip to Boston. Of course this was a most unusual and improper thing for a patient undergoing treatment for alcoholism. Nevertheless, as his stay with me was entirely voluntary, and, moreover, as I was confident he had lost his desire for liquor, I consented, and sent a trusted attendant with him to the city. At night the attendant returned alone, the patient having at the last minute announced his intention of staying over night. Somewhat uneasily, I confess, but by no means discouraged, I awaited the result. The next afternoon he returned alone, clear-headed, sober, and satisfied. His night had been spent in the saloons where he had formerly drank, in company with his old companions, watching them drink, treating them indeed, but drinking nothing himself, for the best of reasons, that he had lost all desire for drink—a condition never before met with in his experience. He had been suspicious and dissatisfied before, not believing, as he said, the stories he had been told about the effect of the treatment in taking away his appetite. He had planned the trip for the express purpose of testing himself, to see whether he really could let liquor alone when it was before him. He came home satisfied, was discharged cured in due time, and has remained sober ever since.

I know of no drug which exercises anything like a specific effect upon the craving for opium and other narcotics. Nevertheless, in the patients whom I have treated by the method of rapid withdrawal, while the system is under the influence of large doses of the bromides, with other sedatives and hypnotics during and closely following the period of withdrawal, succeeded by moderately large doses of strychnine, I have always found the craving to disappear, and with proper care not to return. Nevertheless, the ex-opium *habitué* is likely ever afterwards to find in pain and debility, fatigue and nerve strain, shrill-toned voices calling loudly for opium for their relief. In both alcoholic and narcotic *habitués* there is therefore an imperative necessity for a post-active stage of treatment, during which the patient, while relieved from the necessity of drug-taking, should be surrounded by favorable circumstances and hygienic conditions, in which undue nervous, muscular, and mental strain should be avoided, the body built up, the mind strengthened, and the whole system habituated to living without alcohol or narcotics. If practicable this stage of the treatment should be conducted by the physician, while the patient is yet under his eye and care. In

many cases, however, the patient is unable or unwilling to remain long enough for this purpose, and the physician can only impress upon him the course which he ought to pursue, and leave with him the responsibility of following the course marked out.

I have spoken of the diseased appetite, the unnatural craving, as the cause of the continued use of alcohol and narcotics, and of the necessity for its removal. But there is a cause back of this, that which first led to indulgence in these drugs, when as yet there was no unnatural craving, or which in some cases was itself the cause of the craving. In those cases in which it is possible to find this cause, and remove it, the result is most satisfactory. For example, where opium or morphine has been taken for the relief of pain, as in neuralgia, if the underlying conditions which cause the neuralgia can be removed the outlook becomes thereby decidedly more hopeful for continued freedom from morphine using. In a case reported by me in the *Journal of Inebriety* for January, 1898, the cause of excessive drinking was believed to be irritation of the cerebral cortex, caused by pressure from a depressed bone. The bone was removed, the pressure relieved, and the desire for drink ceased. In several other cases which have come under my care I have believed the underlying condition which called for the anesthetic action of alcohol for its relief to be a serious valvular disease of the heart, which it was impossible to remove. Some one has reported a case in which a bullet encysted in the lung tissue was believed to produce a similar result. In all these cases the prognosis is bad. Where liquor has been taken first as a medicine, it is necessary to impress upon the patient the fact that there is no disease or condition which is commonly treated with alcohol which cannot be treated as successfully without alcohol. Or if the physician himself has not yet reached this conclusion, he can at least assure him beyond all question that for one who has once been a drunkard the use of alcohol in any form, even as a medicine, is forever afterwards unsafe and must be avoided. When evil companions and fast living have been the exciting cause of inebriety, a change in the nature of the man, in his associates, and in his objects of pursuit, must be accomplished before there can be any reasonable prospect of continued sobriety. In short, there is a need of adding reform to cure, in order that either may prove permanent.

The results of the medicinal and hygienic treatment of drug diseases are eminently satisfactory, when compared with like results in other diseases. In a very large proportion of cases the disease can be cured, and entirely cured. Most cases of relapse, indeed, are due not to any lack of thoroughness in the cure, but to the continued

operation of those causes which first led to the indulgence. If, however, we follow the popular idea, and consider as permanently cured only those cases which never return to the use of the drug, then, if we are to judge from the statistics of a large number of institutions, the proportion of permanent cures will vary from $33\frac{1}{3}$ to 50 per cent, and will be nearer the former than the latter figures in most cases. This may seem to the reader like a very moderate percentage of permanent results; and so it is, indeed, when compared with Keeley's claim of 95 per cent of cures and no relapses. It has, however, the advantage of at least approximating the truth — an advantage which it does not share with the claims of the so-called gold cures. Furthermore, it must be remembered that by no other method of dealing with the drunkard and the narcotic *habitué* is it possible — as shown by the history of temperance reform from the days of the Washingtonians down to the present time — to secure even continued sobriety in more than a very minute proportion of those who have once been confirmed drunkards or narcomaniacs.

It may be noted further that the proportion of relapses varies greatly according to the different classes of patients treated, and the degree of mental control and moral responsibility of which they are capable. If we grade men according to their occupation, education, social, financial, or moral standing, we are sure to find that the lower in the scale the patients treated the larger will be the proportion of relapses, while the higher the standing of any individual patient the greater is the probability of his persistency. No doubt the elements which underlie these varying proportions are in the main those differences in physical constitution, mental characteristics, and moral standing which lead in turn to their differences in occupation, education, and mode of life. The better a man's mental balance and force of will, the more apt is he to continue in a normal course of living, when once he has been restored to a normal condition.

In all drug diseases the moral nature is largely involved, and the question of reform is intimately connected with that of cure. The drug *habitué* lives entirely on the sense plane, and it is time wasted in treating him, unless he can be aroused to desire a higher order of life. Time wasted, not because it is impossible to cure him, but because he will be sure to relapse. The man himself must have *the will to stop* before any permanently good results can be expected; and when he has once stopped, and been restored in so far as is possible to a normal condition, he must have *the will to abstain* totally and forever from the drug which he has abandoned, and all others of similar nature.

A NEW METHOD OF TREATING PRURITUS ANI.

BY JOSEPH M. MATHEWS, M.D., LL.D., LOUISVILLE, KY.

Pruritus ani is not regarded as a surgical affection and is almost invariably treated by the family physician; I am convinced that it belongs to surgery, as much as any disease that affects the neighborhood of the rectum.

I reported to the Louisville Surgical Society a few months ago two cases that I had operated upon for this persistent and distressing affection. One was by the actual cautery, the other by a method which I have devised. The patient operated upon by the cautery recovered, but the after-treatment caused him a great deal of pain, as we were treating a severe burn and an enormous blister with deep destruction of tissue. The other operation was followed by no pain, and the patient was perfectly relieved. Since reporting that case I have performed the same operation in three other cases.

The cause of pruritus ani, or pruritus anywhere, but in that neighborhood especially, is not definitely known. Why a man or woman has this distressing and often incurable condition seems at present unknown. I do not mean those light cases where after a little scratching the patient is relieved, or after the application of some simple ointment a few times there is no further trouble. I refer to the severe cases, which have existed for years, and where the itching has become unbearable. I had a patient once that went insane from pruritis ani and was confined in an asylum. The patient operated on, and reported by me to the Surgical Society, said to me "Doctor, if you do not relieve me, you are the last resort; I shall kill myself." This shows that the disease is often a formidable affection.

Pruritus ani is found in young girls, in young men, in middle life, and in the aged. Some authorities seem to think that an enlarged prostate is the cause. I have found it in men who did not have enlarged prostates. Some think the discharge from the vagina over the parts causes pruritus; I have found it in young girls who never had leucorrhea. Writers say that hemorrhoids is a common cause of pruritus; the majority of cases I have had never had a semblance of hemorrhoids. Some say that fistula *in ano* will produce pruritus by the discharge; it is very seldom that we see a case of fistula *in ano* that has any pruritus. I have always believed that in these cases there was an inflammatory condition of the terminal nerves.

Whether it comes from any of the causes I have mentioned

makes no difference as far as a cure is concerned. These conditions are seldom the cause of pruritus, but granting that they are and that this disease exists because of the other conditions, and that it is a disease of the terminal nerves, I am of the opinion that surgery will relieve it. Every one of the five cases that I have had has been relieved perfectly and completely, and from the time of operation to this there has been no recurrence of the itching.

The operation consists of a circular incision as far as the itching extends. In one of my cases it was carried three and a half inches out on the buttock, up over the sacrum, and into the perineum. We then carefully dissect away the tissue, and if necessary, as I did in three instances, remove one inch of the gut, leaving the wound to heal by granulation.

My theory is, borne out I believe by facts, that you destroy the nervous supply of the skin. At first glance, one might think this would leave a sequel; that it might do harm; but it does not. I have received a letter from one patient stating that he never felt so well in his life, and that the itching is entirely relieved. There has been no bad after-effects in any of the cases upon which I have operated by this method. The granulation tissue skins over, and as the nerve supply is gone there is no more itching and it cannot possibly recur. I do not believe a single one of these patients will have pruritus ani again.

In this class of cases the operation is certainly well worth a trial. The dermatologists will bear us out that in pruritus ani lasting eight or ten years we have changes in the skin. In these cases a feeling of terror comes on at night after the patient retires. In confirmed cases the patient gets little rest even during business hours, the desire to scratch becoming practically irresistible. They cannot sleep, become nervous, lose their appetite, flesh and strength, and have a long train of distressing symptoms, and many of them say they would rather have a red-hot iron applied than endure the itching. One patient said to me that the strongest acid applied would be a pleasure compared with the pain and itching which he suffered. A young lady made a similar statement, and she had suffered with pruritus ani for only six months.

I say, then, that in order to relieve what seems to be a very simple thing to the layman and oftentimes to the physician, I believe the proper thing is to dissect, not only the cuticle, but some of the tissue, and in cases where the itching extends up into the rectum remove a half or even an inch of the rectum itself, if it seems necessary. By this plan I believe this distressing ailment can be successfully and permanently cured.

BOOK REVIEWS.

A Text-book upon the Pathogenic Bacteria for Students of Medicine and Physicians. By Joseph McFarland, M.D. Second Edition, Revised and Enlarged. Philadelphia: W. B. Saunders. 1898.

The first edition of Dr. McFarland's work appeared in 1896. It at once, by reason of its practical character, was recognized as one of the standard text-books upon the subject. The present edition brings the subject well up to date and is in every respect a creditable successor to the former one.

The work opens with a chapter dealing with bacteria in general, under the title of General Considerations. After an exceedingly interesting introduction in which the chief discoveries in the science are referred to, the author passes to the description of bacteria, in which he defines a bacterium as a minute vegetable organism consisting of a single cell principally composed of an albuminous substance. Then follows a chapter upon the biology of bacteria. This is followed by a discussion of immunity and susceptibility. We should like if space permitted to reproduce this chapter, as we think it is one of the best recent discussions of the many vexed questions in this department of pathology. As there has been much obscurity on the part of certain writers regarding the antitoxins, we cannot refrain from quoting the following: "The anti-infectious serums are protective against the bacterial infections, but powerless against the toxins. They are the only results of immunization against cholera and typhoid fever. When antitoxic serums can be secured, they are of great importance and should always be selected for purposes of therapeutics. An antitoxin is a neutralizing or annulling agent, not a regenerating one, and therefore in therapeutics finds its proper sphere only in the beginning of the disease combated. Up to a certain point the symptoms of diphtheria and tetanus are due to the circulation of toxins in the blood and can be successfully combated by antitoxic neutralization. Later in both diseases we have symptoms resulting from the disorganization of the nervous system, degeneration of the heart muscle, destruction of the kidneys, etc., and the neutralization of the poison can be of no avail because the lesions are irreparable and the patient must succumb." The remaining portion of the first part of the work is devoted to bacteriological technique.

Part Two is devoted to a consideration of specific diseases and their bacteria. It is here that perhaps the most marked exceptions could be raised against the author's classification. He divides them into four groups:

(*a*) The phlogistic diseases. These are divided into two subclasses, the first of which is called the acute inflammatory diseases, which include three disorders — suppuration, gonorrhea, and mumps; second, the chronic inflammatory diseases, which include tuberculosis, leprosy, glanders, syphilis, actinomycosis, mycetoma, farcin du bœuf, and rhinoscleroma.

(*b*) The toxic diseases, in which are grouped tetanus, diphtheria, hydrophobia, cholera, and pneumonia.

(*c*) The septic diseases, which include anthrax, typhoid fever, bacillus coli communis, yellow fever, chicken cholera, hog cholera, swine plague, typhus murium, mouse septicemia, relapsing fever, bubonic plague, tetragenus, influenza, and measles.

(*d*) Miscellaneous. This includes symptomatic anthrax, malignant edema, the bacillus aerogenes capsulatus, the bacillus proteus vulgaris, and whooping-cough.

As we have said elsewhere regarding the question of classification, hardly any could be proposed in the present state of medical science that is not open to criticism, and perhaps none more so than one which deals with bacteria, particularly if the classification is made on a strictly pathological basis. The divisions do no harm and may prove an aid to the memory.

The book is accompanied by an adequate index and is beautifully issued by the publisher. The plates are without exception clear and sharp in outline. Some of the half-tones of microphotographs we have not seen exceeded in clearness by this process. The work is a splendid example of book-making.

TRANSACTIONS OF THE PATHOLOGICAL SOCIETY OF PHILADELPHIA. Vol. XVIII. Edited by William S. Carter, M.D.

This last report of the Pathological Society of Philadelphia is a splendid contribution to the literature. It contains the reports of the proceedings of the Society from October, 1895, to June, 1897. The volume contains 493 pages and is handsomely and adequately illustrated.

The report contains a list of members, resident, non-resident, and corresponding, also a list of various committees elected in 1895 and 1896. A distinct improvement in the arrangement of this report is noted over that commonly employed, in the fact that the chronological order in which the papers and specimens were presented is not followed, but all matter is placed under the following headings: Osseous system, digestive tract, cardiovascular and hemapoietic systems, respiratory tract, genito-urinary system, nervous system, and ductless glands. These are followed by short divisions, which include technique and miscellaneous. The volume has an excellent index, and taken all in all forms one of the most important additions to the literature of pathology which has appeared within the year.

A MANUAL OF HYGIENE AND SANITATION. By Seneca Egbert, A.M., M.D. Philadelphia and New York: Lea Bros. & Company. 1898.

No branch of medical science is more in need of a practical condensed working manual than is that of hygiene and sanitation. This little work of Egbert, while perhaps it cannot be said to fill a long-felt want, comes as a most acceptable addition to the literature at this time. Public health and sanitation have been such rapidly growing subjects and the development of collateral sciences has been so great that a work on this subject, almost before it can be issued, ought to be modified in some particulars. This manual is a statement of the fundamental principles and facts of hygiene and sanitation. Necessarily in a volume of 368 pages one misses much that is to be found in the larger treatises. It is surprising, however, how much the author has managed to condense into these few pages.

The work opens with an admirable introduction in which the value of sanitary regulations is described from the historical standpoint. We note on page 22 that New York has reduced her death-rate within the last decade from 26.32 to 19.50; Chicago from 20.27 to 13.46; Philadelphia from 21.85 to 18.72. To one who lives in Chicago, these figures cannot but be gratifying, showing as they do a comparative saving of life nearly 100 per cent greater than has been

achieved by any other large city in the country. To one familiar with her dirty streets, foul alleys, and polluted water-supply, which we are constantly advised to boil before using, it is almost startling to think what minimum mortality could be reached if all these conditions were changed.

Like many recent works on other subjects the second chapter is devoted to bacteriology. This is peculiarly appropriate in a work on hygiene, as a comprehension of this science and some skill in its application are essential for every public health officer. Then follows chapters on the atmosphere, ventilation, heating, water, food, stimulants and beverages, personal hygiene, school hygiene, disinfection and quarantine, the removal and disposal of sewage, vital statistics, and the examination of air, water, and food.

The vexed question of quarantine both national and local is not discussed adequately. The author contents himself with giving a description of the present practise in this country. He does not say whether or not it meets with his approval. The "shot-gun" quarantine of the South is described, but is not commented upon. Indeed, throughout the work we find few statements by the author. The chapters on personal and school hygiene are excellent.

The work is a practical and simple manual which will prove useful for physicians who desire to acquaint themselves with the general principles of sanitary science, and will also prove of value to the laity who are interested in improving and preserving the public health.

PRIMER OF PSYCHOLOGY AND MENTAL DISEASE. By C. B. Burr, M.D. Second Edition. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1898.

This little work of 116 pages is designed primarily for the use of training schools for attendants and nurses in the hospitals for the insane. The first part deals with psychology and the second with insanity proper, which is defined as "a prolonged departure from the individual's normal standard of thinking, feeling, and acting." Part Three deals with the management of cases of insanity, while the final division of the book is made up of suggestions as to what to do and what to avoid in caring for the insane. This was an address to the training school class of 1898 at the Eastern Michigan Asylum.

The work abounds with practical and good suggestions regarding the care of the insane, and if all the directions were followed closely the results in the management of the insane would be almost ideal. As a primer for beginners in psychology, such as asylum attendants, the book is of value and will aid in training them for their work. It abounds with practical suggestions, which would be of value to practitioners who have had no special training in the care of the insane.

THE AMERICAN POCKET DICTIONARY. Edited by W. A. Newman Dorland, M.D. Philadelphia: W. B. Saunders. 1898.

This is one of the best pocket medical dictionaries thus far published. It contains the definition and pronunciation of over 26,000 words and terms used in medicine and kindred sciences, in conjunction with over sixty extensive tables. The selection of words is not only quite comprehensive, but judicious. Most of the newer terms have been incorporated in the work, hence it presents a vocabulary that is strictly up to date.

EDITORIAL COMMENT.

THE SANITARY LESSONS OF THE LATE WAR.

For several months past the periodical medical press has devoted considerable space to discussing the various sanitary features of the late campaign. About as many opinions have been expressed as there have been writers. Some have been indictments of individuals and others arraignments of systems. The lay press has also teemed with discussions, varying all the way from the lurid utterances of the sensation-mongering yellow journals to the persistent and crude efforts of a prominent Washington correspondent to support the War Department in all its acts, and to show that this was a mighty well conducted war, viewed from every standpoint. In the meantime the investigation which is now going on drags its slow length along, and it is doubtful if its conclusions will be of very great importance now that the election has passed. Indeed, as the subject has ceased to be of political value it is to be feared that the salutary lessons of the late war may be forgotten.

The discussion of the subject naturally divides itself into two parts: that dealing with the health of the army of occupation in Cuba and Porto Rico, and that of troops assembled in home camps. Regarding the army of occupation, it is doubtful if any accurate conclusions can be drawn from the great mass of conflicting charges which are made. Undoubtedly there were many instances of individual incompetency, and the inadequacy of the quartermaster's department of the army was fully shown in the conduct of the campaign. How much is chargeable to these various factors and how much to certain inevitable and unforeseen accidents, such as the loss of the lighters for unloading supplies, and to the great hurry under which the campaign was undertaken, it will always be impossible to say. The exigencies of warfare will always compel a certain sacrifice of life and health due to unavoidable disease. Indeed, war may be said to be unsanitary in its very essence. Many valuable lessons can be drawn from the sanitary equipment and care of the troops in Cuba; but these could have been equally well known from the reading of any one of a half-dozen reports found in British blue-books. Perhaps the hardest lesson of all for the country to learn will be that at the very foundation of the success of such an expedition is the placing of the best and most competent men in

control. Without this, no matter what rules and regulations are adopted, failure is inevitable.

Regarding the health of the men in home camps, too much cannot be said against the utter carelessness with which these were managed. The troops assembled at Chickamauga were there under precisely the same conditions as our troops during the civil war. The same sanitary arrangements prevailed. There was the same lack of hospital accommodations; the same accumulation of filth upon the ground, with contamination of ground water. There was the same outbreak of typhoid fever, a result that was just as certain in 1898 as in 1863. There was no excuse for the prevalence of typhoid fever in our home camps. In the last thirty years we have learned what typhoid fever is and how to combat it. It was well known before the commencement of the present campaign that an outbreak of this disease was inevitable where a large number of men were gathered together, unless special precautions were taken. We are told that while all this is true, yet the campaign was undertaken in such a hurry that adequate provision could not be made. If our recollection serves us, several weeks elapsed from the time war was declared until the troops assembled in the national encampments. Surely in time of profound peace it ought to have been possible to have selected suitable sites for these encampments, which should have had adequate drainage, and to have provided them with a liberal supply of flooring for tents, and to have constructed temporary hospitals. It ought to be possible to have equipped such a camp with an adequate system of filtration and sterilization of the water-supply. An ice plant ought also to have been installed. We believe that there are manufacturers in this country who can install an ice plant anywhere in the United States in less than a month from the date it is ordered. The investigation that is now in progress may not show who blundered in these respects and through whose want of foresight these things occurred. It is more than probable that when the committee looks into the army regulations, they will find that every one has done his duty as there set forth. This, of course, will exonerate everybody. If the rules have been followed, what more can be asked? The fact, however, will remain that typhoid fever did gain a foothold early in the history of these camps—a thing that ought not to have occurred with our present knowledge of the cause of this disease and the means by which the contagion is spread. The time of the chief executive and those responsible for the management of affairs was taken up by place-mongering politicians while troops were being hurried from the various State

camps, and the golden opportunity for making proper provision for them was lost. They were simply marched into open fields, allowed to pitch their camps as best they could, and the results were not different from those which were reached in the Middle Ages before sanitary science had been thought of.

SELLING PATIENTS.

The practise of some physicians in turning over patients to a specialist and exacting a fee from them for so doing has, we think, become increasingly common. In a city not a thousand miles from the editorial office of MEDICINE we know it to be a common practise for certain specialists to divide the fees derived from patients with the practitioner who sends the case. How common the practise is we are unable to say, but we know that it is openly discussed in gatherings of medical men. It is especially stated that the practise is very common among our surgical *confrères*. It is claimed that even those who devote special attention to internal medicine are not averse to now and then dividing up a plethoric consultation fee.

Two prominent eastern journals have discussed the matter, but they do not seem to have found anything very iniquitous in the practise, though they admit that there may be some difficulty in adjusting a proper division of the spoils and thus friction may be created between the practitioner and the specialist. The practise has found a defender in Melville Black, of Denver, who argues in the *Colorado Medical Journal* in favor of the payment of a fee by a specialist for referring a patient. C. L. Greene, of St. Paul, in a letter to the *New York Medical Journal*, strongly condemns this proposition, as he says the fee must be given secretly, and the patient, if he knew of the transaction, would feel little confidence in "the specialist who purchased him, and would have lost all regard for the family physician who sold him."

The *Northwestern Lancet* in commenting upon this subject says: "There is more of this buying and selling of patients going on secretly than is generally known. In more than one direction in this neighborhood have offers been made by specialists to hand back to the general practitioner a percentage of the fee from cases referred for operation."

The very comments that have been made upon this proposition are sufficient to show that the practise is by no means rare. In the city which we have stated was not far from the editorial sanctum,

we have known of cases in which practitioners have gone to several surgeons to learn where the largest division of the fee could be obtained. Undoubtedly these were extreme instances; that the practise is very common even in its milder form we do not believe.

There can be no question that this practise is to be condemned. Nothing that is fair, just or equitable can be found in such an arrangement. The writer of this editorial upon one occasion was betrayed into a transaction of this kind. It was done hurriedly and without thought of the equities of the case. Since then he has not been, and he thinks for all time to come he will never be, betrayed into a similar arrangement.

No one who watches the tendencies of professional life can fail to see that commercialism is rapidly spreading in the ranks of the profession. Whether this tendency is good or bad we shall not now attempt to say, but the practise of selling patients is one which would be condemned by even the most rudimentary system of business ethics.

THE BLOOD-SERUM OF CONVALESCENTS IN THE TREATMENT OF TYPHOID FEVER.

E. Walger in the *Centralblatt für Innere Medicin* of September 3, 1898, reports four cases in which the serum of convalescent typhoid cases was injected into patients suffering from typhoid fever. All of the cases received a single injection of ten cubic centimeters, excepting one in which a relapse occurred, in whom a second injection was given. All of the cases were seemingly severe, the temperature was high, and the prognosis was regarded as unfavorable. The author thinks that the fact that two of the cases were followed by relapse is proof that the disease was of considerable severity. After each injection of the serum there was a prompt improvement in the subjective symptoms; the temperature did not immediately fall, but declined slowly. The duration in each case seemed to be very much shortened.

From these observations, in which Walger had been preceded by Weisbecker, it is apparent that there is clinical as well as theoretical grounds for the belief that serum-therapy in typhoid fever will have an extended range of application. We shall watch with interest the development of this subject, as there is no disease in which serum-therapy offers such hope of successful results. The brilliant achievements in the treatment of diphtheria cannot but lead to the hope that similar results may follow in other infective diseases.

As having a bearing on this question of immunity and the serum treatment of typhoid fever, we would refer in this connection to a recent report of M. Vincent to the French Academy of Medicine, in which he states that French soldiers in Africa are a hundred times more susceptible to typhoid fever than the native Arabs. M. Vincent holds the opinion that this exemption of native Arabs from infection by typhoid fever does not depend upon a previous attack nor upon a gradually developed immunity by the use of water contaminated with typhoid-fever germs, but to a natural immunity. An examination of the blood by Widal's test showed no serum reaction. It thus appears that the immunity possessed by the Arab consists in an ability to resist the invasion of typhoid fever germs, and is a racial rather than an acquired peculiarity.

STATE CARE FOR EPILEPTICS.

There is no more deserving class for whom the State should provide than epileptics, and it is a question which is receiving increased consideration. Already several States of the American Union have made provision for these unfortunates, and those that have not done so will, we hope, be induced to give the matter due consideration at at early date.

There is no class of unfortunates who appeal more strongly to public sympathy than the epileptics. As a rule the disorder from which they suffer comes to them through no fault of theirs—in this respect differing very much from other dependents, in whom intemperance and other bad habits play such an important rôle in the development of their several disabilities. As society and industries are at present organized the lot of the confirmed epileptic in our crowded centers of population is a most unfortunate one. If he have means and friends, institution care is not needed. If, however, he belongs to that large class dependent upon their own exertions for a livelihood, his condition soon becomes deplorable. Take, for example, the case of an honest and industrious mechanic who develops the disorder. The first attack causes his discharge from employment; he seeks another place, only to be again dismissed as soon as his disorder is known. In this way the avenues of useful employment are gradually closed, his means of livelihood are cut off, and he sinks in the social scale. If this were accompanied, as in the case of the inebriate, by a corresponding blunting of the perceptions and moral sense, it would not be so hard. It is only exceptionally that in the early stages of the disease there is marked

impairment of the mentality. As a rule they remain acutely sensitive to their condition.

It seems to us that the State can have no higher duty than to make provision for this unfortunate class. Fortunately their condition is such that it can be done without very great expense. They do not require the elaborate structures and extensive equipment which is needed in our institutions for the insane. What is required is a home that shall be as nearly like what they have been accustomed to before coming under State care as is possible. This can be provided without very great expense, and with the orderly and commonly industrious class of epileptics who are not insane, could be made largely self-sustaining. With proper medical supervision and careful dieting many of these cases would recover and again become useful members of society.

TRUTH FOR AUTHORITY, NOT AUTHORITY FOR TRUTH.

We note in several of our exchanges references to Koch's recent article in reference to so-called blackwater fever. Not only is the editorial mind greatly disturbed by the attitude of Koch, but correspondence from physicians in Africa and other malarious regions has shown that they are greatly perturbed over these utterances. Some of them claim that the inculcation of this doctrine will result in the loss of many lives, owing to the fact that quinine will not be given to these patients, and consequently many lives will be lost which might otherwise have been saved.

Blackwater fever is, as we understand it, a malarial hematuria. Koch believes that this hematuria is produced by the large doses of quinine given in this disorder and is not caused by malarial poisoning. In this view he is not supported by men of wide experience in the treatment of these affections. Several in criticising the views of Koch have expressed great regret that so eminent an authority should have made so grave a blunder. Some editorial writers have even gone so far as to express the fear that Koch's scientific reputation might be hopelessly wrecked by this error.

It seems to us that both the editors in temperate climates and the physicians in tropical ones are needlessly alarmed over these assertions. If they are true, it would certainly be well for us to know them; if they are not true, the error cannot be long maintained, even when supported by so eminent an authority. As for his scientific reputation, we think it will take care of itself, as, even though he has blundered in this matter, it is one in which he is not

an authority. We have never believed that Koch was skilled in clinical medicine, and this question is purely one in that department. As he has gone somewhat apart from his usual line of work, his opinion really ceases to be of authority, and is not so good as that of a physician who has treated a few hundred cases of malarial fever. The subject-matter does not deal with the foundation upon which Koch's scientific reputation is reared, and therefore it cannot affect it. Those who fear may therefore take heart of grace and rest easy in the hope that this great reputation may not be seriously blasted. On the other hand, to those who fear that the consequences of this error may be very grave, we would again refer to the heading of this article, which is only another statement of the proposition that that which is untrue cannot be authoritative, and that which is true must of necessity be recognized sooner or later as authority.

THE NEW ELEMENT ETHERION.

A few years ago the scientific world had generally settled to the belief that about all was known of physics and the elementary condition of matter that could be learned. This was due to the fact that our then known means of physical research had been nearly exhausted in the study of matter and its phenomena. It is only about three years since the credulity of the scientific world was severely strained by the announcement of the discovery of the *x*-ray by Professor Roentgen. This was quickly followed by the discovery of the element argon and of liquefied air.

At the last meeting of the American Association for the Advancement of Science, Mr. Charles F. Brush announced the discovery of a new gas which seems to possess extraordinary properties. The discovery was made by Mr. Brush while trying to obtain an absolute vacuum. When the exhaustion of a glass bulb reached the thirty-six-millionth of an atmosphere this gas appeared. It either filtered through the walls of the bulb or was evolved from the glass itself. Its molecular velocity is one hundred times and its thermic conductivity one thousand times that of hydrogen. If the deductions of Mr. Brush are correct, this is indeed an epoch-making discovery and must of necessity revolutionize our conception of physics. We refer to it here not that it is apparently of immediate importance to medical men, but only in so far as every advance of this kind, which gives us a greater knowledge of matter, cannot fail to be ultimately of great value to the physiologist.

DEFINITION OF MEDICAL PRACTISE.

The great stumbling-block in the framing of a statute regulating the practise of medicine has been the difficulty in framing a definition that would really define. It is evident that if the practise of medicine is to be restricted to legally qualified practitioners, and those who practise illegally are to be punished for an infraction of the statute, then it must set forth what constitutes the practise of medicine within the meaning of the act. The best definition that we have seen is one taken from a recent decision of a Kentucky judge in passing sentence upon an osteopath for the illegal practise of medicine. It is as follows: "Any person who for compensation professes to apply any science which relates to the prevention, cure, or alleviation of the diseases of the human body is practising medicine within the meaning of the statute."

We do not see that a more succinct or adequate statement could be made. It has the great merit of brevity. Prolixity is generally the fault of our statutes. The very effort to be definite results in the use of too many words and a consequent obscurity of meaning. Short sentences and few words, while they may be misunderstood, are usually not susceptible of several interpretations having equal value.

GALVANISM OF THE NECK IN OBSTINATE VOMITING.

As early as 1884 Apostoli read an article before the French Society of Electrotherapy upon galvanism of the pneumogastric nerve for vomiting. In his earlier communication Apostoli gave exact rules for the application, the duration of each sitting, and strength of current to be employed. Two methods were advised —in one the positive pole was placed on the side of the neck and the negative over the epigastrium. In this way he believed that the descending galvanic current was passed along the pneumogastric nerve. He also described a method known as the bipolar, in which a current was passed transversely through the neck just below the mastoid region. Galvanism applied in this way is very efficient in the control of vomiting from reflex causes, and especially those of a hysterical character. Experience shows that the passage of the current from one side of the neck to the other is somewhat more efficient than when the current is passed from the neck to the epigastrium. We have used the term galvanism of the neck in designating Apostoli's method as it conveys no doubtful theory of the structures acted upon by the current. The act of vomiting is a very complex one, and in addition the uncertainty of passing a descending

galvanic current along the pneumogastric nerve is so great that we prefer to employ the term galvanism of the neck as indicating a procedure of considerable value in the treatment of obstinate cases of vomiting.

THE INCREASE OF MEDICAL STUDENTS.

We are credibly informed that Chicago has the largest number of medical students of any city in the country, and that without doubt it contains a school with the largest number of undergraduated students of any in the United States. More than 800 are said to be matriculated at this single institution. This bears ample evidence of the demand for a higher medical education. The institution in question has within a comparatively short time almost doubled its requirements, each advance in this particular being attended by an increase of pupils. It would be an interesting question at this time to know if the number of medical students has absolutely and relatively increased over the entire country. There is no doubt of their increase in Chicago, but this may be due to local causes and may not indicate an increase in the total number of students entering upon the study of medicine. In view of the fact that professional incomes have been greatly decreased in the last five years and that the demand for medical services is both relatively and absolutely decreased, any increase in the number of medical students cannot but be contrary to the best interests of the profession at large. It is highly important that at this time careful statistical studies should be made, not only as to the increase in the number of medical men, but also as to professional incomes, and some method devised of informing the public as to the probable financial results of a medical career.

SCOLECITIS—A CORRECTION.

Dr. A. L. Benedict desires the following corrections and additions appended to his article in our November issue. He writes: "The statement that 'The mortality of abdominal operations varies quite closely but inversely with the time occupied' is, of course, an error, as mortality increases as does the time. Farther on a transposition of words has occurred that quite changes the sense. 'Since the majority of cases of peritonitis in women not due to obvious traumatism or pelvic disease are the results of scolecitis' is far less than the truth. The words 'in women' should come after 'pelvic disease'—that is to say, practically all cases of so-called peritonitis

idiopathica, according to the nomenclature of ten years ago, are really due to a scolecitis. In men, traumatism, perforating ulcer of stomach or of bowel as in typhoid, rupture of extraperitoneal or intravisceral abscess, etc., in the aggregate account for a very small proportion of cases of peritonitis. In women, peritonitis, beside the rare causes, may be due to either of two quite common conditions—pelvic inflammation and scolecitis. Case for case, the danger is much greater in the latter, because of its greater liability to perforation. Thus a degree of temperature, pulse, leucocytosis, etc., that can be ascribed to a pus-tube, perimetritic sepsis, etc., may not indicate operation, while the same symptoms in the same degree would afford a most urgent indication for operation in the case of the appendix.

"As an antithesis to my two cases of scolecitis simulating biliary obstruction, Dr. S. A. Dunham, of Buffalo, kindly allows me to allude to a recent case of his own in which scolecitis was diagnosed and an operation performed, without revealing any conspicuous abnormality. Later death occurred, and the necropsy showed a gall-bladder filled with pus and obstructed by a gall-stone. As the case had been carefully considered both from the medical and the surgical side, no blame can be attached to the attendants. Like the fatal case of my own, we must allow a certain proportion of failures due to difficulties in the way of diagnosis which are practically inevitable, however easy it may be to formulate rules of procedure that, theoretically, apply to every case."

THYREOID EXTRACT IN THE TREATMENT OF OBESITY.

Widely varying results have attended the use of this remedy. In many cases its exhibition has been attended by prompt reduction in weight, while in other cases no such result was obtained. Recent French investigators have offered an explanation of these varying results. They find that in young and vigorous subjects with a good circulation who indulge in some exercise, the use of the remedy is not attended by a reduction in weight. Flabby and anemic cases, in whom the circulation is poor, are greatly benefited. These observations are but confirmatory of what might have been *a priori* believed regarding the action of this remedy, as it is a well known fact that not all of the cases of obesity have a like pathology. While the results—namely, the increase in the fatty tissue—are the same in each case, the underlying nutritional disturbance may be widely different.

ABSTRACTS.

MEDICINE.

The Value of Casts in the Prognosis of Albuminuria.—

According to L. Bard (*Lyon Médical*, 1898, No. 41) the persistence of albumen in the urine, after an attack of parenchymatous nephritis, is compatible with a complete subsidence of the inflammatory process in the kidney.

In parenchymatous nephritis the most pronounced degenerative changes are in the epithelial cells of the tubules. If the inflammation subsides, the cells may be restored to their normal condition. However, if the newly formed cells are imperfectly regenerated, the lining of the tubules may resemble somewhat scar tissue, and perfect physiological activity of the kidney is not to be expected. An analogous pathological condition results from superficial burns of the skin; the thin epidermis that is regenerated is never capable of the normal function of the skin. Kidneys the seat of the cicatricial changes described may secrete albumen in the urine, and the author designates the affection as "albuminurie cicatricielle." The prognosis is usually good, since the albuminuria is not dependent directly on an inflammatory process.

A careful study of casts found in the urine aids one materially in differentiating cicatricial albuminuria from parenchymatous nephritis, and in judging the severity and prognosis of the last named affection. Granular casts arise from the débris of degenerated epithelial cells of the urinary tubules and vary with the intensity of the process. In severe inflammation, owing to the increased proliferation and destruction of the epithelial cells, the casts are consistent and opaque. As the inflammation subsides the débris is correspondingly diminished, and the casts become clearer and more or less transparent. In many cases, especially when the inflammatory process is not severe, epithelial cells that are not wholly degenerated and still show their contour are found adherent to the casts. The diameter of the cast corresponds to that of the tubule from which it arises, and increases with the severity and age of the process.

After the inflammation subsides, and if the epithelium of the affected urinary tubules is regenerated in the imperfect manner described, resulting in the formation of scar-like tissue, the urine

may contain albumen. Casts may also be present, but they will be of the hyaline and not of the epithelial variety.

Amorphous, waxy, or colloid casts are seldom found in pure parenchymatous nephritis, but are more likely to appear when the process is combined with sclerosis or secondary atrophy of the kidney. Real epithelial casts—*i.e.*, those made up of mosaic-like, well preserved epithelial cells—are very seldom found in parenchymatous nephritis. They occur more frequently in toxic nephritis and signify desquamation without real inflammatory changes in the epithelium. The author's recorded observations deal with parenchymatous nephritis only.

The author concludes, then, that if albuminuria persists after the subsidence of a real parenchymatous nephritis, and repeated examination fails to reveal the presence of granular or colloid casts, one is justified in assuming that the inflammatory process has disappeared and that the albuminuria has its source in the cicatricial condition of the epithelial cells of the tubules. The number, size, consistence, and character of the casts reveal very closely the intensity of the existing process, although the conclusions drawn from such evidence may not appear to correspond, at that time, to the clinical symptoms.

Classification of Chronic Nephritis.—

H. J. Whitacre read a paper before the Academy of Medicine of Cincinnati (*Cincinnati Lancet-Clinic*, Nov. 19, 1898) on the pathological basis for the treatment of Bright's disease. Regarding the vexed question of classification of chronic nephritis, he says it is commonly divided into two classes: First, chronic parenchymatous nephritis, chronic glomerulo-nephritis, waxy kidney, large white kidney, chronic diffuse nephritis, chronic desquamative nephritis; second, interstitial nephritis, cirrhosis of kidney, granular degeneration, chronic indurative nephritis, arteriosclerotic nephritis.

This division of chronic nephritis is based upon the idea that in one set of cases the change in the epithelial cells is predominant and most important, while in the other the change is in the stroma. The author thinks such a classification is not well supported. An examination of any given series of kidneys will demonstrate that all the kidney elements — stroma, tubules, glomeruli, and vessels — are affected in all cases of chronic nephritis, and that the symptoms given by such lesions can bear no relation whatever to the predominance of the change in any given element. It is impossible for a clinician to predict from the symptomatology, except in a very

general way, the lesion present, and an observer attempting such prediction must have been impressed by the predominance of failures. Kidneys the seat of chronic inflammation may be large or small, red or white, rough or smooth, independent of the clinical symptoms.

The author thinks the presence or absence of exudation from the renal vessels, as evidenced by albumen in the urine, does correspond in a very definite way with the clinical symptoms. The best bedside classification is one which considers chronic nephritis as a single lesion and divides this into two varieties, based upon the clinical symptom of exudation from the renal blood-vessels. This will give a chronic productive nephritis with exudation and a chronic productive nephritis without exudation as two clinical divisions.

DIFFERENTIAL TABLE.

Symptoms.	Chronic Productive Nephritis with Exudation.	Chronic Productive Nephritis without Exudation.
Skin	Decided anemia, waxy skin.	Very slight except late in disease, skin not waxy.
Edema	Regularly.	Rarely.
Dyspnea	Always present, worse reclining.	Frequent but associated with (1) contracted arteries; (2) weak heart.
Stomach	Loss of appetite, nausea, sometimes vomiting.	Regularly, catarrhal gastritis.
Heart and arteries	Hypertrophy of left ventricle, may be contracted arteries.	Hypertrophy of left ventricle and contracted arteries form a prominent feature of the disease.
Cerebral	Headache, sleeplessness, acute or chronic uremia.	Acute uremia a prominent feature; hemiplegia, headache, stupor.
Temperature	None.	102°–108° F. in attacks.
Urine	Specific gravity 1001–1010, quantity small, albumen in large amounts, casts abundant.	Specific gravity 1010–1015, quantity large as a rule, light color; no albumen except occasionally, no casts except occasionally.

Venous Congestion, and its Germicidal Action upon Anthrax Bacilli in the Subcutaneous Tissues.—

In a recent number of the *Centralblatt für Bakteriologie* (Band 24, No. 9) Prof. H. J. Hamburger, of Utrecht, describes a number of very interesting experiments, in which he demonstrates that the germicidal action of blood and lymph is greatly augmented in the presence of carbon dioxide. The conception of this simple principle in bacteriology and its application in practise is not original with Hamburger, nor does he claim originality. His operations are in principle similar to those that have been for some time conducted

in the clinics of Bier, Mikulicz, and others in the treatment of tubercular affections of the extremities, especially of the joints. The fact that CO_2 added to pure cultures of tubercle bacilli has a decidedly deleterious effect upon the germs led a number of surgeons to the belief that, since the increase of carbon dioxide in a part can be so readily produced in the extremities of the animal, this fact might prove of practical use in the treatment of certain tubercular affections. The increase of CO_2 in the affected extremity was readily accomplished by simply producing, through the means of a ligature, a venous congestion, a passive hyperemia. The results obtained have been varied, some claiming good results, others testifying to the impracticability of the procedure.

Hamburger through his experiments demonstrates not only that the germicidal action of the blood and lymph is increased through venous hyperemia, but that this action is due to the carbon dioxide, and not to phagocytosis, etc., as has been claimed by some. With a view to selecting pathogenic germs whose virulency could be quickly and readily determined, he used the anthrax bacilli, in some cases with spores, in others without. In order to exclude the phagocytic action of the leucocytes, the bacilli growing upon small bits of agar were wrapped tightly in pergameneous paper, so that the bacilli could not escape and invade the surrounding tissues, and the leucocytes could not gain entrance to the germs. To determine the influence of congestion alone upon the virulence of the bacilli, the question of individual power of resistance and the point of infection must be eliminated. With the above three points in view, a small pocket as described was introduced into the subcutaneous tissues of each fore-leg of the animal (dog, rabbit, etc.). After the small wound had healed, and all possibility of gaping and sloughing was eliminated, venous congestion was produced by the introduction of a ligature about one leg, the other being left free. The ligature was watched closely, and the edema from time to time relieved. After from seven to eleven days the agar bits were removed, and were used in the inoculation of white mice, etc. Without exception it was found that the mice inoculated with bacilli from the non-congested leg died, while the mice inoculated with bacilli from the congested extremity were not killed.

Hamburger concludes that the experiments demonstrate that under the elimination of phagocytic influence of the white corpuscles, venous congestion certainly destroys the anthrax virus in subcutaneous tissues.

Control of Diphtheria.—

W. K. Jaques (*Journal of the American Medical Association*, Nov. 26, 1898), speaking of the value of antitoxin in the treatment of diphtheria and the importance of the use of a reliable product, says antitoxin should be subjected as little as possible to the vicissitudes of commerce. It deteriorates with age, and the irregular demand often leaves it on the druggist's shelf for months. When it is needed it is usually in an emergency, when the life of a patient is dependent upon the quality of the first dose of serum. Irresponsible firms have been tempted to place an unreliable grade of serum on the market. Foreign governments have restricted the manufacture of the article. If State officials are not able to do this, they are at least in a position to investigate and satisfy themselves of the best grades. No greater service can health officials perform than to arrange for a fresh supply of a reliable grade of antitoxin, throwing careful restrictions about the distribution of that intended for purposes of charity. Delayed treatment always means increased infection.

As to the reduction of mortality from careful bacteriological work and the use of a reliable antitoxin, the author says that the predisposition to this disease is as great in Chicago as in any city of its size in the world. Its geographical situation makes it the commercial center of the United States; while the immense system of railways radiating from and through it makes it a rendezvous for all classes. Added to this are its crowded districts and its raw lake winds, which have together made the city a shining mark for diphtheria. By furnishing convenient culture media, microscopic examinations, the best obtainable grade of antitoxin, and the services of expert physicians as inspectors and operators, Chicago has reduced its death-rate from this disease from 37.5 to 6.7 per cent.

Matches Free from White Phosphorus.—

According to the *Philadelphia Medical Journal* of October 22, 1898, this problem, which has so long engaged the attention of chemists and manufacturers, seems recently to have been solved by two Frenchmen, Sevine and Cahen. The danger of bone necrosis from the use of white phosphorus in the making of matches, and the unsuitableness of red phosphorus, as well as its explosiveness when combined with potassium chlorate, made it desirable to obtain some substitute free from these disadvantages. Such a substance seems to have been found in a mixture of phosphorus sesquichloride and potassium chlorate. The former substance, in addition to its sta-

bility and resistance to atmospheric influences, ignites at a temperature not a great deal above that required for white phosphorus, besides mixing readily with potassium chlorate. It has a special odor, does not evolve fumes at ordinary temperatures, and is non-phosphorescent and practically non-toxic.

The occasional use of a decoction of matches for suicidal purposes, and the not infrequent cases of poisoning in children from the sucking of matches, show the importance of this discovery from a public health standpoint; to say nothing of the prevention of chronic phosphorous poisoning among those engaged in the manufacturing of matches.

A Case of Cystinuria.—

E. M. von Eberts (*Montreal Medical Journal*, August, 1898) describes a case of a chlorotic woman who had complained of "scalding" on micturition for five months. Examination of urine gave a specific gravity of 1035; distinctly acid; recent specimen clear straw color, but on standing twenty-four hours developed a peculiar faint greenish-yellow tinge with distinct odor of sulphydric acid. An abundant colorless crystalline deposit, closely resembling triple phosphates, appeared at the end of six hours. Microscopical examination showed numerous six-sided tablets, arranged singly or in rosettes, with highly refractive borders, giving the typical chemical tests for cystin, with solutions of ammonium and acetic acid.

The writer says that cystin crystals may be readily differentiated from six-sided crystals of uric acid by the addition of ammonia, which dissolves the cystin (which crystallizes out on evaporation), but with uric acid forms crystals of ammonium urate. From triple phosphates, crystals of cystin are distinguished by the addition of acetic acid, the former being readily soluble, the latter remaining unchanged, or if anything their definition being made more perfect. The crystals may be obtained in fairly pure state for preservation by repeated washing on the filter with dilute solution of acetic acid and subsequent drying.

The Value of Laparotomy in the Treatment of Tuberculosis of the Peritoneum.—

In the *Sammlung Klin. Vorträge*, N. F., No. 211, Breitkopf and Hörtel record their experience with the operative treatment of tuberculosis of the peritoneum. In certain cases laparotomy is of decided value. The cases, however, must be selected, as a good result is not to be expected in all instances. In general, the prognosis after

operation is better in children than in adults, especially if the latter present other foci of tuberculosis. An exudate free in the peritoneal cavity offers the most favorable results. When adhesions separate the fluid into many sacculated spaces the operation is less imperative, and when adhesions are extensive without the presence of fluid the disease is already well advanced toward recovery.

The suppurative form of tubercular peritonitis does not contraindicate operation, provided the exudate can be removed. The prognosis is bad when the suppurative form shows extensive sacculation. At times it is not easy to differentiate the different forms before operation.

Chronic Hiccough.—

In the *Northwestern Lancet* of November 15, 1898, H. N. Moyer described the case of a man who had suffered for years from this condition, without other nervous disturbance or marked impairment of the general health. The first attack, which came on at the age of 20 years, was followed by a second at 27, a third at 30, a fourth at 38, and the fifth at 41. For the last seven years there had been attacks about once each year, lasting five or ten days each. During the last two years they had become more frequent, and during the year before he came under observation had been practically continuous. The hiccoughs were fairly regular, usually numbering fifteen or twenty to the minute. The patient presented none of the ordinary stigmata of hysteria. Since the attacks have become so frequent there has been loss of weight, and a soreness at the epigastrium and along the margin of the ribs has developed.

SURGERY.

An Operation for Ectropion of the Lower Lids.—

A. Blitz reports in the *Northwestern Lancet* of November 1, 1898, the case of a young woman presenting the following conditions of the upper lids: Edges red, rounded at margin, although not much thickened; ciliæ absent, here and there an isolated one, stunted and of unhealthy appearance. About three or four lines above the margin and running parallel with it a crease is shown, that at first glance has the appearance of an old cicatrix. Lower lids: Integument almost entirely absorbed by a slow ulcerative process, which for years has been increasing, but at a snail's pace, at the conjunctival border. The marginal portion of the palpebral conjunctiva has been forced over and everted by the gradual shrinking of the

integument, and now forms the border of each eyelid, measuring fully one-fourth of an inch in width, extending the entire length of the palpebral aperture.

These unnatural conjunctival borders, having been exposed to atmospheric and other irritating influences for a number of years, exhibited the characteristic appearance of such exposure. Their surfaces are dark red, thickened, and roughened. Along the junction with the integument, at different points, were minute foci of ulceration, some close together, others separated by a narrow bridge of apparently unaffected but moist tissue.

There were no ciliæ left, and the altered palpebral apertures gave the eyes a staring appearance that was very annoying to the patient, and she could not close the lids. The degree of eversion is shown in Fig. 1.

FIG. 1.

An incision was made commencing at the lacrimal punctum, running the entire length of the dermoconjunctival junction to the external commissure. The integument was dissected below the lid for about an inch. The everted lid was replaced, returning the palpebral conjunctiva to its proper position, facing the globe. Two incisions were made, the lower one commencing at the external commissure, the end of the first incision, and extending backward to the lower temporal region; the other starting fully three-fourths of an inch above and about that distance back of the external commissure, curving down and backward and running parallel with the lower, about five-eighths of an inch apart at the base, where its connection with the temporal region was maintained, narrowing to one-fourth of an inch where the two lines joined to form the apex. This narrow strip was turned at its base, and placed in the denuded space with the apex near the inner canthus. Then the lower border of the strip was stitched to the skin below, the upper one to the newly replaced border, while the edges of the gaping wound, at the former site of the strip, were united by sutures.

FIG. 2.

FIG. 3.

Fig. 2 shows the plan of incisions. Some of the integument sloughed, necessitating a second operation. The final result is shown in Fig. 3.

Formalin Irrigations of the Peritoneal Cavity in Infective Peritonitis.—

J. C. Webster contributes to the *American Gynecological and Obstetrical Journal* for November, 1898, an exceedingly instructive article on a suggested method of improving the technique in these operations. He refers to the fact that the treatment of infective peritonitis has given anything but brilliant results. He notes that the experience of others shows that it is practically impossible to remove infective material from the peritoneal cavity by the use of sterilized water alone. The use of the ordinary antiseptics, if of sufficient strength to destroy or inhibit the production of micro-organisms, destroys the epithelial covering of the peritoneum. Their use in any considerable strength is also attended by dan-

gerous symptoms of poisoning due to the absorption of these toxic agents.

He finds in formalin a non-toxic agent that is of considerable power in inhibiting the growth of microorganisms. He has made a series of experiments upon dogs in which formalin was introduced in considerable quantity into normal peritoneal cavities without causing disturbance of the general health nor any symptoms of poisoning. He then produced an experimental peritonitis in dogs, and subsequently irrigated the peritoneal cavity with formalin, and in each case the dog recovered.

Having demonstrated conclusively that upon dogs at least solutions of formalin had no deleterious effects when injected into the peritoneal cavity, he applied the treatment in six cases in the human being in which there was more or less extensive infection, in all with favorable results.

There is an addendum giving the results of his experiments with chinosol in the peritoneal cavity. This substance, like formalin, was found to be non-toxic and practically free from injurious action upon the peritoneum. It is regarded by Wyatt Johnson as having great power in checking or inhibiting the growth of microorganisms even in weak solutions.

A Successful Gastrectomy for Cancer.—

M. H. Richardson in the *Boston Medical and Surgical Journal* of October 20, 1898, reports what is now the third case of the successful removal of the stomach. The patient was a woman 53 years old, who did not present the typical signs of cancer of the stomach, but was believed to have a malignant growth in the omentum or transverse colon. An exploratory incision was made, which revealed a cancerous mass involving almost the entire wall of the stomach. There was, however, a margin of healthy tissue about one inch wide between the esophagus and the tumor, which led the operator to think that the entire removal of the organ was possible. Accordingly the operation was proceeded with, and little difficulty was experienced until an attempt was made to attach the severed end of the duodenum to the esophagus. It was found that the duodenum was held quite firmly by its attachments and blood-vessels; so firmly that it could not be united in its new position without dangerous tension. It was freed and united to the esophagus by interrupted Lembert sutures. Nutrition was sustained by rectal feeding, after which food was given by the mouth. On the twenty-sixth day the temperature and the pulse were normal and the patient sat up; she

was then able to take liquid food in considerable quantities, and on the thirty-sixth day she returned to her home. At that time she took food in sufficient quantities to satisfy her appetite. Four months later there had been no material gain in weight, but there had been in strength. Richardson thinks that gastrectomy is a justifiable operation in cases where malignant disease is confined to the stomach walls and when the strength of the patient justifies the operation.

Treatment of Strabismus in Private Practise.—

Charles H. Beard (*Journal of the American Medical Association*, Oct. 8, 1898) reported his recent experience in the treatment of strabismus in private practise, with a table of 214 cases, to the Ophthalmic Section of the American Medical Association at the late Denver meeting. Paralytic and latent strabismus were excluded from the table.

Of the 214 cases, 142 were of the convergent form, 70 of the divergent, and 2 of the mixed; 78 were under 15 years of age, 101 between 15 and 30, and 35 were over 30; 129 were females, and 85 were males.

One hundred and fifty-eight cases received some form of treatment, if only the fitting of a pair of glasses. Seventy of the 158 were operated upon by the author's one-suture advancement method and their deformity corrected, 12 per cent of these surgical cases having both eyes operated. The operation was for convergent strabismus in 50 instances and for divergent in 20. Forty-one of the 158 cases treated were cured of the squint by other than surgical means—*i.e.*, by properly fitted glasses and by systematic muscle training. Thus, of 158 cases who had some measure of treatment, a cure was effected in 111, leaving 47, some of whom are still receiving attention, and will yield additional percentage of cures. The balance have wandered off.

The writer condemns tenotomy pure and simple as a remedy for strabismus, affirming that muscular advancement is the only surgery —not the only treatment—for this affection.

Foreign Body in the Larynx.—

Fischer in the *Australasian Medical Gazette* of October 20, 1898, reports a foreign body consisting of a large peppercorn transfixed by a pin which he had removed from the glottis of a boy aged 12 years. It had lain apparently quiescent for three and a half months. The statement of the boy when he came for consultation was that he

had been using a pin as a dart three or four months before and had swallowed it. He, however, had suffered no ill effects therefrom, and had forgotten all about it until the day of his seeking advice, when a pricking sensation was felt in the throat, which made him cough frequently, and the boy felt sure the pin was working its way out. On examining the throat the right ventricular band and right arytenoid were much swollen, and the movement of right cord greatly diminished. Lying on the right ventricular band was a large foreign body like a pea, and sticking out through the foreign body was a small object like a pin. The greater part of the pin had, therefore, penetrated the right ventricular band and presumably also the posterior part of the trachea, and was hidden from view; it was tightly fixed in its bed. He had had no difficulty or pain in swallowing, and speech was unaffected apparently. After removal of the foreign body the boy made a rapid and complete recovery. The peculiarity about the case is that so irritating a foreign body as a pin could remain so long in the flesh and cause so little local disturbance. There was no sign of pus, and little reflex trouble.

A Means of Establishing Collateral Circulation in Cirrhosis of the Liver.—

Talma in the *Berliner Klinische Wochenschrift* of September 19, 1898, gives us a novel suggestion in the treatment of this disorder. He has observed post-mortem a thick network of veins in the adhesions which have formed in this disease between the surface of the liver and the abdominal wall. This observation led him to think that possibly a collateral circulation might be established, by which the blood of the portal vein could be carried around the liver and the circulation thus reestablished.

Acting on this suggestion Eiselsberg operated on a case in which tapping had been performed five times, each time being followed by a rapid accumulation of fluid. Upon opening the abdomen the surface of the liver was found to be granular and the peritoneum thickened. The gall-bladder and great omentum were stitched to the abdominal wall. After this operation the fluid did not accumulate, but the spleen remained enlarged. Later the abdomen was again opened and the spleen stitched to the abdominal wall, after which it decreased in size. Two months after the operation the patient left the hospital, and two years later he was in excellent health.

Talma points out that the operation can only be of use when the symptoms are due to interference with the circulation and there is no lessening of the activity of the liver cells.

How to Palpate the Abdomen.—

J. B. Murphy (*Cleveland Journal of Medicine*, November, 1898), in an address upon ileus before the Cleveland Medical Society, tells us to place the entire flat surface of the hand on the abdomen and have the patient respire. With diaphragmatic respiration going on, he says, we are able to outline the size and shape of a tumor or note any local resistance that may be found. The boundaries of a mass can be easily made out beneath the hand applied in this way. If, however, the fingers are used little or no information is obtained. Especially is this method of examination of great importance in intestinal obstruction, as here the question is one of outlining resistance.

We feel like emphasizing the point made by Dr. Murphy, and have selected it from a number made in the above address which were perhaps equally as good. We have, however, so often seen this rule violated, that we feel the matter cannot be mentioned too often.

Treatment of Spina Bifida.—

J. H. Nicoll in the *British Medical Journal* of October 13, 1898, reports the results obtained by him in the treatment of thirty cases by the open method, which he claims should replace injections or other means. Seven of his cases died within a month after the operation, but he claims that these statistics are not bad, as all cases were operated on—some in which the sac was sloughing or gangrenous; and in some cases there was hydrocephalus.

In making the operation no attempt was made to prevent the escape of cerebrospinal fluid. If the sac is small, it is excised and the opening closed by a simple ligature. If, however, it is large and contains nerve cords, so much of the sac as is free from nerve tissue is cut away. The remainder is cut into strips, the incisions being parallel with the nerve structures, and is then replaced within the spinal canal and the opening closed in the usual manner.

Rectal Examination in Doubtful Cases of Appendicitis.—

H. B. Delatour says in the *Brooklyn Medical Journal* for November, 1898, that the diagnosis of acute and subacute appendicitis, the most superficial examination, is frequently sufficient to enable one to make a correct diagnosis, while in many cases the most extensive and painstaking search fails to completely clear the way to an absolute diagnosis. While the history and palpation of the abdomen in the majority of cases make the existing condition plain, it is not so

when the appendix is situated below the brim of the true pelvis and the abscess forms, in the male, between the bladder and the rectum; or, in the female, between the uterus and the rectum. In these cases the point of tenderness is frequently absent, and the rigidity of the rectus muscle absent or else present to a moderate degree on both sides. No tumor is appreciable, and still the pain and the temperature with the rapid pulse point to an active process going on in the region of the appendix.

As illustrating the importance of rectal examination, the author reports six cases in which the abscess was located within the pelvis and a diagnosis was made by a rectal examination. These form part of a series of sixty-three cases, so that in about 16 per cent of all of the writer's cases the abscess was within the pelvis.

THERAPEUTICS.

Treatment of Tabes.—

In the *Therapeutic Gazette* of October 15, 1898, F. S. Pearce has an excellent study of tabes, from which we excerpt the portion dealing with treatment. Syphilis should be thoroughly treated, if it stands in an etiological relation to the disorder. The general health of the patient is to be kept up in suspected tabes. The stomach is to be carefully observed, and the rheumatic or other diathesis is to be treated. Continue small doses of iodide of potash and bichloride of mercury, which are valuable alterative adjuncts in most cases from any cause. Cod-liver oil is the nutrient *par excellence*. Diet is paramount and should be suitable to the individual case. Donovan's solution gtt. v to x t.i.d., auri et sodii chlor. gr. $\frac{1}{60}$ to $\frac{1}{15}$, sometimes act well as alteratives. Antipyrin and phenacetine are the most valuable analgetics, but may cause circulatory depression. Use morphine only as a *dernier ressort*, else you add to tabes another serious malady. The phosphates and testicular fluid injections have proven of value as an aid to nerve nutrition.

Suspension by the Mitchell or Lombard apparatus is of benefit in some cases. This is probably due to stretching the membranes of the cord, freeing the posterior roots, and hastening circulation in the posterior columns.

The training of coordination, consisting of having the patient stand with eyes open, then closed, approaching the fingers to the nose, and also walking upon a straight line, and flexions of the limbs and trunk, is of the utmost value. The more extreme gym-

nastic measures should be used in the order of strength of the patient—*i.e.*, whether he is in the incipient, the ataxic, or paralytic stage.

Cauterization of the spine may alleviate pain. Bromides may occasionally be required to allay irritability of the nervous system. Strychnine is apt to do harm, but small doses of nux vomica may do good in toning up the digestive tract. Keep the bowels well open, and the urine normal by diuretics.

Electricity in the form of faradism and descending galvanism and franklinization are, in this order, agents of value. Hydrotherapy has an important rolê in hot and cold douches applied to the spine for five minutes daily.

A rest treatment may be essential for the best results in stubborn advancing cases. Such patients should never exercise to fatigue, and should be in the fresh dry air much of the time, especially at high altitudes, as this favors peripheral circulation. Massage and electricity, properly applied, are most valuable. The use of stimulating liniment rubbed well over the surface of the body has proven also of great value in stimulating circulation, so deficient in this class of patients.

The following prescription has done well in the writer's hands:

℞ Ammon. chlor..... ʒ iiij.
Glycerin..... f ʒ j.
Tr. capsic..... f ʒ ss.
Aq. menth. pip.....q. s. ad f ʒ xij.

M. et sig.: Rub on body daily for twenty minutes, with massage.

Statistics of Serotherapy in Tuberculosis.—

J. E. Stubbert (*Boston Medical and Surgical Journal*, Nov. 24, 1898) read a paper before the American Climatological Association based on a study of eighty-two cases. He stated that the experimental results lead undoubtedly to the conclusion that the treatment with antitoxic serum is still in the experimental stage, and should as yet be used only in sanitariums and under the best conditions. "We are on the road to success in this disease, and nearer the goal than ever before." The serum used by the author was prepared by Dr. de Schweinitz, director of the Biochemic Laboratory of the U. S. Bureau of Animal Industry at Washington, D. C. It was manufactured by the Government, and was to be used for scientific purposes only. Other serums were used in a few cases. Dr. Stubbert believes that the antitubercle serum is contraindicated in the third stage of pulmonary tuberculosis, and also in cases of mixed infection; contrary to Maragliano, who claims that antitubercle serum is indicated

in all cases and in all stages. The author referred to some unpleasant symptoms following the injections, but did not find them dangerous. In one case only was there syncope. The advantages are: (1) This method does not tax the functions of digestion or produce gastritis, diarrhea, or loss of appetite; (2) the bacilli have disappeared in cases where the sputum was still abundant; (3) up to the present time in his experience no relapses have occurred. The serum can be given advantageously about six or seven months.

In cases complicated with the streptococcic infection the author used Pasteur's antistreptococcic serum, believing that if the secondary infection could be neutralized a clear field would be left for the action of the antitubercle serum. Six cases of this class are described. The author found that the streptococci decreased very greatly or disappeared entirely after the second injection. The largest number of injections given in this class was four. In the total of eighty-three cases the expectoration decreased in 82 per cent; the appetite improved in 81 per cent; weight was gained in 78 per cent; physical signs improved in 78 per cent; temperature decreased in 49 per cent; bacilli disappeared in 13 per cent and decreased in 35 per cent; cough decreased in 79 per cent; apparent immunity established in 21 per cent; generally improved, 78 per cent.

The author is not yet a thorough convert to serotherapy in the treatment of tuberculosis, but believes that these investigations are along the right line, and that this line of treatment, on the whole, is more satisfactory than treatment by drugs. He does not regard it as a specific.

Treatment of Inebriety.—

T. D. Crothers in the *Virginia Medical Semi-Monthly* of November 1, 1898, again affirms his views that inebriety is a disease and that the victims of the drink evil are not affected with a moral disorder, but rather a physical degeneracy, which is to be met by physical and medicinal means. In this paper he lays special stress upon what he regards as a fact, namely, that alcohol is becoming more and more prominent a factor in the causation of disease; that inebriety has become so well established as a disease of the nervous system that its practical recognition and treatment should fall within the province of the family physician. He thinks that the inebriate is both poisoned and starved, and that common-sense principles should apply in his treatment. The possibility of cure is established beyond question, and the chief obstacles are the failure of

early recognition and the use of unsuitable or quackish means. The so-called gold and other cures are but the application of common remedies which every physician should use and can generally apply with greater success and better adaptation to the individual case than has proven to be the case in the much-vaunted "institutes" for the cure of inebriates. The first indication is the removal of the most prominent causes. This is not always alcohol, but often some source of irritation and exhaustion in living and surroundings.

The removal of alcohol can be accomplished by substitution; strong infusions of cinchona or quassia, or any similar bitter, given in two-ounce doses every hour, will be followed by a profound disgust for spirits and a willing abstinence. The quack method of provoking emesis, and impressing the mind with an idea of the poisonous action of alcohol present, is dangerous in many ways. A number of bitter drugs given freely in large doses seem to destroy all taste and desire for spirits, with no injury to the organism.

Strychnine the author thinks is an excellent tonic later in the treatment, after the first two days, and particularly if the kidneys are not diseased and the drug is not contraindicated.

Common Errors in Dealing with Pulmonary Tuberculosis.—

F. I. Knight calls attention in the *Boston Medical and Surgical Journal* of November 17, 1898, to a few serious errors in dealing with pulmonary tuberculosis. The first of these is a failure to make an early diagnosis, which he thinks is essential to the successful treatment of the disorder. If, he says, there is delay until the disease is self-evident and secondary infections have taken place, there is not much chance of restoring the patient. Too often he thinks that early morning cough and expectoration is neglected, it being attributed to an irritation of the throat, and perhaps a slight hemorrhage is attributed to the same part of the respiratory tract.

A second error is the failure to admit the gravity of the situation the moment it is discovered, and to put the patient at once in the best possible condition for recovery. The author thinks it is better that the patient should be fully informed, as in this way only will he give thorough cooperation in the effort for recovery.

A third error is that while temporizing treatment may be employed which is not only useless but may be positively injurious. Among these the author classes cough syrups, cod-liver oil, and creosote. These remedies may be useful in selected cases. But creosote in large doses, so as to disorder digestion, certainly does

harm. Cod-liver oil, unless the digestion and assimilation are good, will certainly be injurious. If a sedative is required, it should be given in as simple a form as possible and without syrup.

The author thinks serious errors are made in sending patients away from home with the uncertainty that they shall go south or west, and in some cases in which their means are very limited. Sometimes, too, the advice is given when the disease is so far advanced that there is no hope of climatic change being of benefit. He emphasizes the necessity of keeping the patient under careful medical observation.

The Continuous Use of Digitalin in the Vasomotor and Cardiac Lesions of Senility.—

Henry Bates, writing in the *Therapeutic Gazette* of November 15, 1898, says that early senility usually manifests itself in the vasomotor system, and the most objective sign of this is a preternatural fulness of the superficial veins. In these patients he often finds slight defects in intellection; sleep is impaired, and there is often some failure of vision and obtunding of hearing. Respiration is usually increased and ordinary exertion is often accompanied by dyspnea. The digestive organs are less active, with some disturbance of the liver. There is often a loss of weight, and albumen is not infrequently present in the urine. When these symptoms are associated with what is commonly known as a "senile heart," in which there is increased action, possibly some swelling of the extremities, and often more or less bronchial trouble, the author resorts to the continuous use of digitalin. He says that several active principles have been classed under this name, but that the one that he employs is prepared by Merck and should be called digitalein. It is a substance of definite chemical composition and is obtained from an infusion of digitalis. He employs it in doses of one-tenth to a half-grain, three or six times daily. It should be continued for months or even years. He finds that it is free from some of the objections which can be urged against the tincture of digitalis. It has not its property of increasing peripheral resistance and thus causing hypertrophy.

Treatment of Coughs with Heroin.—

Morris Manges in the *New York Medical Journal* of November 26, 1898, gives his experience with this drug. He quotes Dreser and Floret. The former has studied the effect of this drug and finds it ten times as powerful as codeine in slowing the respiration.

He found that not only were the respirations lessened, but that the volume of each inspiration was greatly increased; therefore the quieting of the cough was not due to a lessening of the expectorating power. Floret found the drug exceptionally useful in allaying coughs and pains in the chest in both acute and chronic catarrhal inflammation of the respiratory tract. He stated that out of sixty cases treated this annoying cough was promptly relieved. Out of twenty-five cases of pulmonary tuberculosis relief was obtained in twenty-one. There were no unpleasant after-effects. On the whole Manges agrees with many of Floret's statements, but in his cases a few showed disagreeable after-affects, but these were milder and less frequent than after either morphine or codeine. A number of cases of asthma were relieved. The results obtained in tuberculosis patients were by no means constant, but in some they were very favorable. A mild antipyretic action was noted in some cases. As a general analgetic heroin has proved to be absolutely useless in ordinary doses.

Heroin is a white crystalline powder, slightly soluble in water; a solution, however, may be obtained by adding a few drops of acetic acid. It may be dispensed in powders rubbed up with sugar. The dose is from one-twelfth to one-sixth of a grain.

Urotropin in Cystitis.—

T. G. Kelly, in *The Therapist* of October 15, 1898, records his experience in the antiseptic treatment of cystitis. He has used all of the principal drugs in the treatment of this affection, but urotropin is the only one that has proved reliable and satisfactory.

The author recites three cases. One of these, a case of gonorrheal cystitis with vesical irritability and an acid urine, was relieved in nine days, and the cure was complete at the end of three weeks. Another case of cystitis in a man 68 years old was relieved in eight days. The urine in this case was acid and contained pus and mucus in abundance. There was much irritability and pain. The third case, a man 35 years of age, had suffered from chronic cystitis for fifteen years. For twelve years he had been subject to occasional attacks of hematuria. The urine was alkaline. In three days the urine became acid, was clear, and in fourteen days free from pus. This latter case, being the most severe, was given twenty grains of the drug three times a day. This was later reduced to fifteen grains, and still later to 7½ grains, twice daily. Five months after beginning treatment the patient was apparently fully restored.

In prescribing this drug the author recommends a dose of 7½

grains in mild cases twice or thrice daily. The reaction of the urine should first be determined, and if acid a small quantity of citrate of potash, or if alkaline a little dilute mineral acid, should be given in addition to the drug.

Apocynum Cannabinum in the Treatment of Dropsy.—

T. S. Dabney in the *Therapeutic Gazette* of November 15, 1898, reaffirms his earlier conclusion as to the value of this drug in the removal of dropsical exudates, both from the peritoneal cavity and the cellular tissue. He claims that the failures in the use of this drug so far reported are due to the fact that poor preparations are employed and that many of those now on the market are prepared from other varieties of Apocynum. He reports sixteen cases in which the remedy was used with success. These include cases of dropsy due to cirrhosis of the liver, mitral regurgitation, subacute nephritis, chronic tubal nephritis, and aneurism. He finds that the chief advantages possessed by the drug are the small quantity necessary to produce free diuresis, its pleasant aromatic taste, and that it also has tonic properties. He claims that it is entirely free from toxic properties, as an overdose is speedily followed by vomiting. He thinks that the use of this remedy will in the vast majority of cases make tapping unnecessary.

Lactophenin in Acute Rheumatism.—

G. H. Thompson, in the November issue of the *Tri-State Medical Journal and Practitioner*, writes of a further experience in the treatment of acute rheumatism with this drug. He reports the case of a patient who was suffering from high fever and pain in the right elbow- and shoulder-joints. There was swelling, but no indication of suppuration. The temperature was 104°. Lactophenin was given in fifteen-grain doses every three hours. The first powder reduced the temperature to 100°, with marked relief to the insomnia and pain. The drug was at first given with the view of promoting comfort and lessening temperature, but the improvement in the joint conditions was so marked that the drug was continued. In five days the patient had returned to his work.

Treatment of Lupus by X-rays.—

Eduard Schiff (*Wiener Klinische Rundschau*, Nov. 20, 1898) reported to the Imperial Academy of Physicians, in Vienna, favorable results in the treatment of lupus erythematodes by the application of the *x*-rays. One of these cases involved nearly the whole

of the face. The entire skin was infiltrated. The treatment was confined to the left side of the face, so that a comparison could be instituted. At the end of two months all the infiltration had disappeared and the skin was smooth and even, with the exception of a small ulcer in the center of the cheek. The right side of the face remained in the same condition as at the beginning of the treatment. He referred to Finsen's results with the use of strong light in the same affection. At the meeting he exhibited some photographs of Finsen's cases. Finsen's methods are referred to in a recent abstract in MEDICINE.

Moriz Kaposi, in the discussion, expressed doubts as to the value of the methods, particularly as it was claimed that the results were good in such widely differing affections as lupus erythematodes and lupus vulgaris, in one there being a production of new tissue, and in the other a simple inflammatory process.

Ringworm of the Scalp.—

This troublesome and obstinate affection is treated by H. Lyle (*Lancet*, Oct. 8, 1898) with a solution of silver nitrate one drachm to the ounce. The head is first shaved and the patch scraped with a Volkmann's spoon and the solution thoroughly applied to the denuded surface. The treatment should be repeated about twice each week, each time the spoon being used and the parasitic growth freely scraped away.

In *The Lancet* of October 22 Perkins recommends a strong ointment of sodium chloride in vaselin. This causes an intense inflammation of the scalp and destroys the trichophyton. Soothing applications are employed later.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

A New Method of Abdominal Hysterectomy.—

E. G. Myers contributes to the *Cleveland Medical Gazette* for November, 1898, the description of an operation devised by him which he regards as an improvement upon some of the later methods. He qualifies the range of his operation by stating it is only to be used in suitable cases, which he says are those in which there are small or moderate sized fibromyomas.

The abdomen is opened in the usual manner, except perhaps extending the incision a little lower than is usually required. The incision should be large enough to freely admit the fundus of the

uterus when drawn into the wound. The fundus is grasped by stout vulsella forceps, and strong traction is made by an assistant; with small blunt scissors, curved on the flat, two curved incisions are made, extending almost entirely across the fundus, one anterior and the

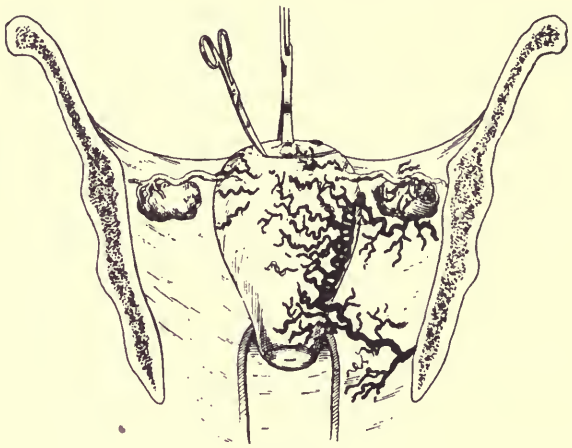


FIG. 1.

other posterior to the grasp of the vulsella (Fig. 1). These incisions should be carried through the peritoneum and cellular tissues down to the solid uterine structure. By blunt dissection and occasional snips of the scissors the peritoneum, cellular tissues with blood-vessels, can be readily and quickly reflected, anteriorly, posteriorly, and laterally (Fig. 2).

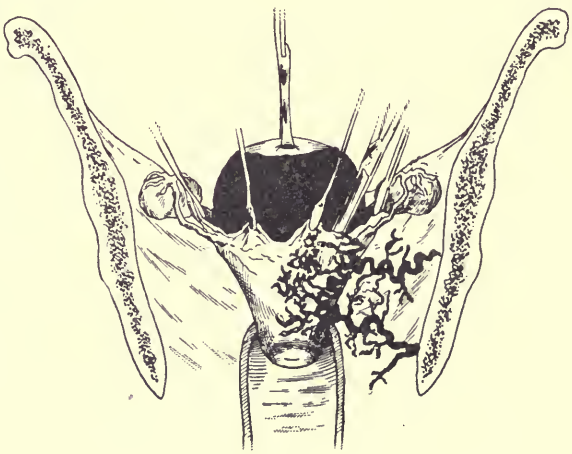


FIG. 2.

The attachment of the round ligament and Fallopian tubes must be severed by the scissors. At about this point in the operation, by applying at equal distances apart four or more medium-sized clamps to the reflected flaps, and by grasping them one after the other, the field of operation is always in view and the work much facilitated. The dissection is continued in like manner down to the cervix, which can either be removed or allowed to remain, according to the preference of the operator. The author prefers to remove it. If at this time traction is made on the four forceps and the vulsella, the flaps will form a funnel with the uterine mass in the center, and the cervix plugging up the bottom. When the cervix is to be removed, dissection is simply continued, and it is severed by the scissors at the junction of the cervical canal and the vaginal mucous membrane, when the mass is entirely free. This inverts the cervical portion of the vagina, and instead of shortening, lengthens it.

In this operation, by keeping very close to the uterine mass, all blood-vessels of any size are avoided and there is only moderate oozing. Thus far the work has been practically extraperitoneal, the flaps serving to protect the omentum and bowels. If the ovaries and tubes are diseased, they may now be easily removed; otherwise they are allowed to remain, and the operation is finished as follows:

FIG. 3.

With a large needle, in holder, threaded with a long silk or catgut suture, the flaps are transfixed a number of times, to reduce the mass into the form of pleats (Fig. 3). By this continuous suture the flaps form a bridge over the floor of the pelvis, which is perfectly smooth, lessening the chances of vaginal hernia or prolapse. The abdomen is closed in the usual way.

The operation is contraindicated in very large fibroids or malignant disease, and in such cases as can be easily removed by the vagina. The advantages claimed are the ease with which the operation can be performed, the short time required, no danger of injuring the ureters or any other organ, the avoiding of ligatures or any foreign bodies, the absence of hemorrhage, complete closure of the perineal cavity, thereby lessening chances of infection, and leaving a smooth pelvis.

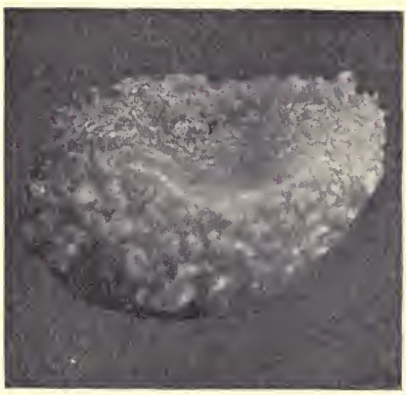
Specimens of Early Extra-uterine and Early Intra-uterine Pregnancy.—

Frank A. Stahl, in a demonstration before the Chicago Gynecological Society (*American Gynecological and Obstetrical Journal*, November, 1898) showed specimens of early extra-uterine and early intra-uterine pregnancy.

SPECIMEN 1 (original size).—Early extra-uterine ovum. Ampullary form of tubal pregnancy. Clot broken open. Notice seeming absence of villi. (Diameter of ovule in specimen, 7 mm.).

The first specimen was a clot containing a gestation-sac of an extra-uterine pregnancy of about the second or third week. He believed it to be one of the earliest specimens on record in which diagnosis had been made before operation and verified during it. Notwithstanding the fact that some physicians were of the opinion that vomiting was not so reliable a symptom in extra-uterine as in

SPECIMEN 2.—Early intra-uterine ovum. Well-marked villi. Original size, length 16 mm., breadth 11 mm., thickness 8 mm.



SPECIMEN 2.—Enlarged.

intra-uterine pregnancy, it had been one of the prominent symptoms in this case and in three others that had come under his notice. He thought that vomiting might be present in many cases, but pass unnoticed because of its mild nature. It would seem that vomiting should be among the symptoms of early extra-uterine pregnancy. At the time the clot was removed it appeared to be covered with a shiny membrane, like a diseased ovary, but the gestation-sac was found intact. The lady had given birth to a child four years previous to this, then had passed through a long siege of pelvic trouble, the exact nature of which was not known. The uterus was retroflected, very sensitive, and firmly bound down by adhesions that were firm and leathery. During these four years

menstruation had been at times so painful that she had been obliged to remain in bed and use sedatives. When menstruation recurred after the operation, it was painless.

The form of extra-uterine pregnancy in this case was that in which the ovum developed wholly within the fimbriated extremity of the right tube. The ovum goes on to a certain development, and then is ruptured, sometimes by exertion on the part of the woman, and sometimes by the physician in making the examination; in either case we have an expression of the part, similar to a tubal abortion. The opening of the abdomen in this case was attended by a severe hemorrhage.

The only point of interest in the second specimen is its early development. The woman had her only child some years ago; menstruation became irregular during March, April, and May of last spring, and when it recurred on the 26th of May she flowed severely. Upon going to closet she observed that she had passed this little white body.

Common-sense Infant Feeding.—

Under the above title Louis Fischer writes in the *Medical Record* of November 26, 1898, regarding what he thinks is a practical mean in this vexed question. No doubt under certain conditions better results can be attained, but like any other question in dietetics it is not always the ideal that can be reached, but what is practical under the circumstances. He says that an infant from its birth should be fed once every two hours. Some children sleep from 10 P.M. until 6 A.M.; others require an extra feeding about 2 A.M. The mixtures he recommends according to age are as follows:

FORMULA NO. 1 (FOR A CHILD AT BIRTH).

℞	Cow's milk	7 ounces.
	Water	20 ounces.
	Milk sugar	1 ounce.

The above is to be divided into eight parts, so that the quantity for each feeding consists of about three ounces.

FORMULA NO. 2 (FOR CHILD TWO TO FOUR MONTHS OLD).

℞	Cow's milk	12 ounces.
	Water	23 ounces.
	Milk sugar	1½ ounces.

One feeding every two and one-half to three hours, and no oftener, after the infant is two months old. The above quantity is to be divided into seven portions, each portion to consist of about five ounces.

FORMULA NO. 3 (FOR A CHILD FOUR TO FIVE MONTHS OLD).

℞ Cow's milk ..... 16⅔ ounces.
Water ..... 16⅔ ounces.
Milk sugar ..... 1⅓ ounces.

This quantity is to be divided into six portions, three bottles containing six ounces and three five ounces each. The infant now requires one bottle of five ounces alternating with a bottle containing six ounces, once every three hours.

FORMULA NO. 4 (FOR A CHILD FIVE TO NINE MONTHS OLD).

℞ Cow's milk ..... 25 ounces.
Water ..... 12½ ounces.
Milk sugar ..... 1⅔ ounces.

The above quantity is to be divided into six portions, three of six ounces and three of seven ounces each. The same rule applies here to alternate, once every three hours a six-ounce bottle, followed three hours later by a seven-ounce bottle.

FORMULA NO. 5 (FOR A CHILD NINE TO TWELVE MONTHS OLD).

℞ Cow's milk ..... 37½ ounces.
Water ..... 12½ ounces.
Milk sugar ..... 1⅔ ounces.

Feed the baby with eight ounces of the diluted milk at each feeding, once every four hours. The above quantity to be divided into six portions, each containing eight ounces.

FORMULA NO. 6 (FOR A CHILD OVER ONE YEAR OF AGE).

℞ Cow's milk ..... 50 ounces.
Milk sugar ..... 1⅔ ounces.

Feed but once in four hours, using pure milk, without dilution, giving the baby eight ounces at each feeding. The above quantity is to be divided into six equal portions, containing eight ounces each.

Case of Complete Prolapse of the Abdominal Wall—Pendulous Abdomen.

J. W. Hyde reports in the *Brooklyn Medical Journal* for November, 1898, a case of this deformity which far exceeds that often observed even in extreme cases. The patient was delicate, anemic, and wasted, with the history of long-continued prior disability. She was scarcely strong enough to move about her room. The same atony which was so marked in the abdominal walls seemed to pervade the entire economy. This was the patient's third pregnancy. An attempt to make an examination disclosed great abnormality of the abdomen. Its contents were mostly found in a long pouch extending downward as far as the junction of the lower with the middle third of the thigh.

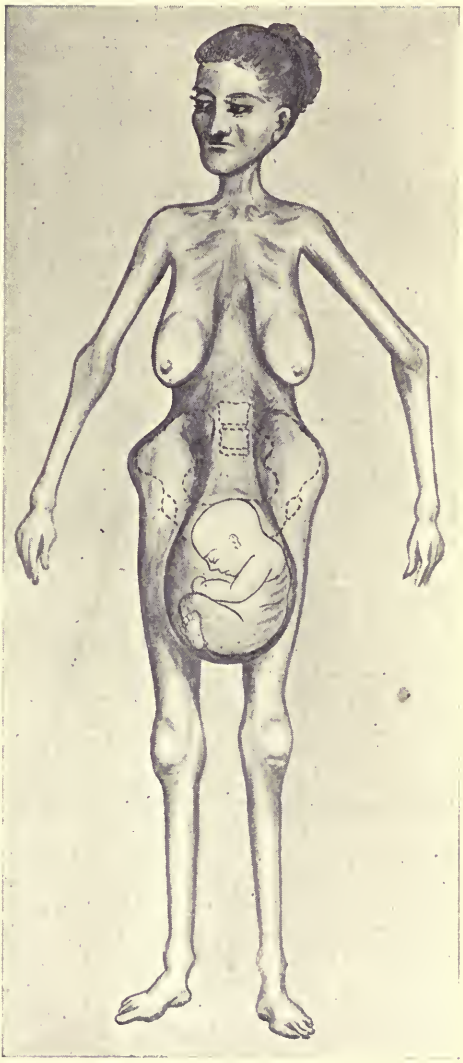


FIG. 1.—Case of pendulous abdomen, showing position of child in abdominal pouch outside of the pelvis; pelvis in dotted lines, indicating relative position of fetal head to superior strait.

Fig. 1 shows the relation of this pouch and its contents to the bony pelvis. The walls of the pouch were exceedingly thin, and the parts of the child could be determined as readily as though covered by a thin blanket. Vaginal examination showed the fetal head presenting and the os dilated about one-third, *in front* of the symphysis.

FIG. 2.—Pouch turned back on abdomen—fetal head being guided into superior strait.

The patient was chloroformed, the pouch turned back, and the child's head forced into the superior strait. The forceps were applied and delivery was rapidly and safely effected. There were no untoward results following delivery, but the abdominal walls never regained their tonicity. Since the delivery the patient has constantly worn a bandage, the loose abdominal walls being gathered into folds under it.

FORENSIC MEDICINE.

The Use of Bacteria and Their Products for Homicidal Purposes.—

James Crichton Browne (*Montreal Medical Journal*, November, 1898), in a recent address before the Pharmaceutical Society of Great Britain, refers to the innate stupidity of the average homicidal poisoner in choosing the means for disposing of his victim. In this he finds that medical men are no exception to the rule, and he finds it difficult to explain why they have displayed such poverty of resource as is manifest in their published misdeeds. One would have thought, he says, that medical men, with their knowledge of drugs and command over them, would have been able to ring the changes in an infinite variety of ways, to employ alkaloidal and other organic poisons in such a manner and in such combinations as to perplex the clinical observer, baffle the pathologist, and set at

naught the skill of the analyst. With what might almost be called infatuation they have all but invariably worked on in the old grooves, and carefully prepared a net for their ensnarement.

For the most part they have trusted to the inorganic poisons which, owing to their unalterable character, ease of purification, and definiteness of reaction, can be identified in the body with mathematical certainty; and when an alkaloid has been tried, it has been strychnine, which of all the alkaloids, in unalterability and definiteness of reaction, approaches most closely to the inorganic poisons, and to which, too, very conclusive physiological tests can be applied. The later and more fugacious alkaloids, which when detected it would be impossible to affirm might not be putrefactive products—ptomaines, albumoses, and peptones—which result from the decomposition of the tissues, or of ingested food, have, as far as we know, never been tried; and even nicotine, the most widely diffused of alkaloids, with which nearly a third of the population, more or less, is always poisoned, has not been resorted to with premeditated malice, except in one case. Palmer used strychnine; Smethurst, antimony; Pritchard, antimony; Cross, arsenic; Lamson, aconite; Chantrelle, who, although not a doctor, was a chemist and druggist, hydrocyanic acid. Such is the ignorance, stupidity, and rashness shown by these medical poisoners that one is forced to conclude that they were, like the miscreants who carry on illicit lines of practise at the present day, medical men only in name, and that in them, as in the criminal classes generally, intellectual incapacity was associated with moral debasement. Not one instance have we amongst them of average ability, to say nothing of originality or genius, in their nefarious transactions.

The author believes there are many cases of undetected poisoning. In almost every case where a medical man has been charged with poisoning there was good ground for the belief that there were other victims besides the one for which the charge was brought. He thinks the pathogenic microbes and their toxins will furnish the chief weapons of the poisoner of the future.

As our knowledge of the life history and habits of these microbes extends, and our skill in manipulating them increases, the number of them available for felonious purposes will become considerable; but even now there are not a few that might be employed with homicidal intent. The tubercle bacillus and that of actinomycosis would be too slow and uncertain in their action for a murderer's purpose, and that of anthrax would probably awaken suspicion if employed upon any one not a wool-sorter or engaged in the

slaughter of animals. But it is not inconceivable that the bacilli of typhoid fever, pneumonia, or bubonic plague, of enteritis, and of malignant edema, the vibrio of Asiatic cholera, the staphylococcus aureus of suppuration, the spirillum of relapsing fever, might be made to find their way into the system by the digestive canal, and thus set up their destructive operations. A little disorder of the stomach having been first induced by some indiscretion in diet, the organism corresponding with typhoid fever or cholera reared in a test-tube might be administered in apparently pure water so as to cause these diseases, and the water in which they are administered, although it teemed with them, might be submitted to the examination of the chemist, and in the absence of other organic matter be pronounced by him of great purity. Mixed with milk, the bacilli of diphtheria and of glanders would readily find their way to the follicles of the tonsils, for which they have a special affinity, and thence diffuse their pernicious influence. Once established, they would increase and multiply at a prodigious rate.

A Case of Suicidal Poisoning with Hydrocyanic Acid; Recovery.—

Cases of hydrocyanic acid poisoning are comparatively rare; particularly is this true if the individual recovers. Louis Kolipinski reports in the *Maryland Medical Journal* of October 22, 1898, the case of a man aged 42 who took about half an ounce of a solution of the acid. The exact quantity could not be stated, as the labels had been carefully erased. The acid in question was the acidum hydrocyanicum dilutum, U. S. P. This liquid contains two per cent of the acid, consequently the quantity taken was about 4.8 grains.

The question that has sometimes been raised as to the ability of an individual taking the acid to perform voluntary acts is answered in this case by the fact that the patient ascended a pair of stairs, washed the glass, and then threw himself on the bed, where he immediately became unconscious. When found by Dr. Kolipinski he was lying on the bed; his face was flushed; eyelids half open, eyeballs rolling slowly; pupils dilated; pulse accelerated; deep coma; deep rapid, peculiar breathing, with sobbing inspiration. There had been involuntary urination and defecation. The tongue was swollen and purplish; the breath had a heavy metallic odor. The poison was swallowed at 7.55 P.M.

The treatment consisted first in the injection of $\frac{1}{40}$ grain of atropine sulphate; then ten grains of citrate of caffeine by enema; then enemata of ammonia water, four or five times repeated.

At 9.30 P.M. there were involuntary motions of the trunk, arms,

and legs, the patient turning on his left side. Edema of the lungs was apparent on auscultation. At 10.30 P.M. he was conscious and was able to drink a glass of milk. The pupils at this time were contracted. During the reviving stage the marked symptoms were rapid breathing and dyspnea, resulting from efforts to swallow or talk. He continued to improve during the night, and the following morning was as well as before taking the dose.

Christian Science in England.—

Recently great excitement has prevailed in England over several important deaths that have occurred, notably that of Frederick Herold. A London correspondent of the *Medical Record* (Nov. 5, 1898) refers to another case, that of Major Lester. This officer, only 38 years old, was appointed in 1892 instructor of military topography at Sandhurst—a sufficient indication of his service. In August he was attacked with tuberculous peritonitis and attended by two surgeons. Two physicians were called in consultation. On September 5 the doctors were dismissed and a Mrs. Grant, said to come from America, was called in to give "Christian treatment." She said she began treatment on receipt of the wire, before seeing the major. This treatment she described as "taking up the right thought of the omnipotence and love of God." When asked how she would treat a broken leg, she said she "would ask a surgeon to treat it." She said she never gave any material remedy whatever, but continued her treatment when away from the patient. She added, "Christ never sent the sick to physicians," upon which the coronor remarked that "Christ had a power these people are trying to usurp, trying to make themselves out equal to God." Mrs. Grant stated her charge for treatment to be a guinea a week. The coroner in his summing up said that he could not help thinking "some of these people would be better, and very much safer, in a lunatic asylum." The jury found that the major died of tuberculous peritonitis, and expressed their "strong sense of abhorrence of the so-called treatment of Mrs. Grant."

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

MAMMARY CARCINOMA.

BY JAMES B. BULLITT, M.D., LOUISVILLE, KY.

Improved methods of research and earnest work have solved many problems, but of the true nature of carcinomata and the conditions which favor their growth we know little. Of late more attention has been directed to the nature of tumors, than which does not exist a more important subject. In a recent article in the *American Journal of the Medical Sciences* Park says: "The subject of the etiology of tumors, benign and malignant, seems to me the most important and at the same time vexed problem now before the surgical pathologists of the world. The universality of their distribution, their general prevalence, their horrible malignancy, and the futility of all save operative methods of treatment, combine to make cancers the most dreaded because the least understood enemies of the human race."

Park refers to the many unsuccessful efforts to demonstrate by culture and inoculation the infectious nature of this disease. He then describes at some length the apparently successful efforts of two Italian pathologists, Professor Sanfelice of the University of Cagliari in Sardinia, and Professor Roncali of the University Surgical Clinic in Rome. These two experimenters published their first communications in January and February, 1895. Their work points with a high degree of probability to the blastomycetæ as being responsible for the malignant growth known as cancer. The common yeast is included in this same group. They do not reproduce and multiply by a process of cell division as do the common forms of bacteria, but by a process of budding, appearing under the microscope like some forms of cacti. These parasites are found chiefly in

the periphery of the tumor and in its juices, but seem to disappear from the central and older portions. They grow on media which are slightly or strongly acid, which accounts, perhaps, for the previous unsuccessful efforts to cultivate organisms from tumors, as it was supposed the media should be alkaline like the general tissues of the body. These fungi, obtained from malignant tumors, have been injected into small animals and have produced similar growths in which they were again found. Again cultivated, they have produced tumors in animals into which they were injected, thus fulfilling the conditions imposed by Koch. There only remain the general and wide-spread repetition, confirmation, and acceptance of these researches.

That malignant disease is on the increase is abundantly testified by many observers. Those who make denial of this fact are chiefly those who have not investigated critically. Park, Billings, Williams, and others are convinced that cancer is more prevalent than ever before.

Probably twice as many women as men die of cancer, for the reason that the uterus and female breast are the organs in which the disease occurs most frequently. Of women affected with cancer, about 34 per cent have cancer of the uterus and about 40 per cent cancer of the breast. Of tumors of the breast, about 85 to 90 per cent are carcinomatous. Thus we see that mammary carcinoma is the most frequent of all cancers.

A majority of cases occur in a limited number of families, as illustrated by Broca's celebrated case of Madame Z——, of whose twenty-six descendants reaching the age of 30 years, fifteen died of cancer. Heredity is a constitutional condition favoring the development of cancer. Trauma, or an antecedent mastitis, favors the occurrence of cancer, but we are completely in the dark as to the nature of the constitutional condition which favors such development. For this reason the combat with this disease is an unequal one. No matter how thorough the extirpation, or how successful the primary operation, danger of recurrence always remains. When the true nature of carcinoma is discovered and we understand the constitutional condition which permits cancerous growths, then we may be able to overcome them.

In syphilitic or tuberculous infection treatment of a local lesion is not likely to be successful unless the general condition be at the same time combated. This is true in many cases of cancerous disease. Recurrences, whether local, regionary, or metastatic, are not always to be referred to imperfect and incomplete operation, but

must be looked upon as occurring under the same conditions and as a result of the operation of the same causes which produced the primary manifestation of the disease.

There is no successful method of treating this disease other than extirpation by means of the knife, and this should be as complete as possible; any other procedure is illusory and a waste of valuable time. The hope of radical cure is exactly proportionate to the speediness of operation after the discovery of the tumor. It is unfortunate that palpable involvement of the axillary glands should be regarded by some as a determining factor in making the diagnosis of carcinoma. These lymphatics are not ordinarily involved in less than six months, and it is within this time that extirpation has its most flattering promise of success.

The carcinomatous process has its extension and dissemination in three ways: first, by progressive involvement and extension of the infiltration into surrounding contiguous tissues; second, along the lymphatics, being arrested by and continuing its growth in neighboring lymphatic glands; third, by breaking into and being carried away by a blood-vessel, usually a vein. This latter method of extension is happily infrequent and is apt to be rapidly fatal through embolic infection.

For operative purposes only the first two modes of extension need be considered. A cancerous growth ordinarily starts in the epithelial lining of an acinus; it may originate within a milk duct, duct cancer, or it may have its origin in the superficial epithelium of the nipple. The proliferating cells push their way into the interstices of contiguous tissue; the skin may become extensively involved either *en masse*, constituting the so-called *cancer en cuirasse*, or the involvement may take the form of infected areas as large as a coin and separated by larger or smaller spaces—*cancer en plaques*. The gland structure and the contiguous connective tissue is involved in the same way. These extensions, both into skin and subcutaneous contiguous tissues, are oftentimes not appreciable to touch or sight, but careful microscopic sections have demonstrated the universality of their occurrence; therefore the absolute necessity of extirpating the whole gland, together with its surrounding adipose tissue, and also of removing a wide margin of the skin, when it is involved. In such cases the most important consideration is not the provision of flaps to cover in the gap made, but the removal of all infected tissues. Rather than take the chance of leaving infected tissue, a broad and gaping wound should be left to granulate. It were better still to do immediate skin-grafting, and provide for closure of any large defect.

The most serious method of extension is by the lymphatics. The superficial lymphatics of the outer two quadrants of the breast pass beneath the skin to join lymphatic glands lying beneath the lower border of the pectoral muscle. This group connects with and joins together several other groups of lymph nodes, the location of which is of importance. The axillary group consists of ten or twelve glands, large in size, some of which are dispersed in the loose areolar tissue, while others form a chain around the axillary vessels. A small chain runs along the lower border of the pectoralis major muscle, receiving the lymphatics from the front of the chest and mammæ, this group having been already referred to. Another group is placed along the lower margin of the posterior wall of the axilla, receiving the lymphatics from the integument of the back. Immediately beneath the clavicle and under the pectoralis minor muscle, in the so-called space of Mohrenheim, are two or three subclavian lymph nodes. Through these the axillary, supraclavicular, and deep cervical glands communicate with each other. In this way the supraclavicular and deep cervical glands, along the sheaths of the subclavian and carotid artery and internal jugular vein, are sometimes infected. The deep lymphatics of these two quadrants have their origin in the milk ducts and acini. They form a rich plexus, and pass downward to the fascia covering the pectoral muscle; coursing along this, they finally join, at the lower border of the pectoral muscle, the lymphatics of the axilla. The superficial lymphatics from the two inner, or sternal, quadrants of the breast are joined by the deep lymphatic vessels and penetrate the intercostal spaces from the second to the fourth, to finally join the lymphatics of the anterior mediastinum. These lymphatics soon come to lie so deeply as to elude the surgeon. The two inner quadrants are seldom involved; the cancerous process, in the great majority of cases, having its inception in the two outer quadrants, most frequently the outer and upper.

According to Volkmann, it sometimes happens that the glands in the opposite axilla are infected; still more rarely, that these alone are involved. This can occur when the cancerous growth is on the sternal side of the breast, and is accounted for by a communication between the lymphatics of the two sides across the median line.

The chief method of extension is along the lymphatics; they may be infected without the involvement being recognized. If a radical cure is aimed at, it is necessary to cleanly remove all tissue harboring infected lymphatic vessels and glands. This involves a clean dissection of all adipose and areolar tissue around the breast

and in the axilla, of the pectoral fascia, of the plexus of lymphatics around the axillary vein, of the lymphatics in Mohrenheim's space, and sometimes of the lymphatics situated above the clavicle. To accomplish all this a partial, sometimes a complete, resection of the pectoralis major muscle is necessary, as well as a division of the pectoralis minor muscle, to expose the vault of the axilla.

In a recent communication Halstead (*Annals of Surgery*, 1898) reiterates his former conviction concerning the necessity of making all breast amputations thorough. By careful microscopical examination of tissues removed he has found the supraclavicular region involved in 34 per cent of sixty-seven cases in which it was cleaned out. In many cases the involvement of this region and the axilla cannot be determined by microscopic appearances. He now advises that the supraclavicular region be cleanly dissected, and all lymphatics and areolar tissues removed down to the blood-vessels, in every case.

As outlined, the operation is a formidable one. Halstead states that with skilful assistants he requires from two to four hours for its performance. Care is taken to pick up and tie all blood-vessels so as to make the operation practically bloodless. He is convinced that if blood be not lost in any amount and the anesthetic is properly given, such operations can be prolonged indefinitely with safety. The completed technique as described by Halstead is reported verbatim in Dennis's System of Surgery, vol. iv.

A CONTRIBUTION TO THE STUDY OF THE BLOOD OF TUBERCULOUS PATIENTS.[1]

BY GEORGE W. JOHNSON, B.Sc., M.D.

Hematology is as yet but imperfectly developed, and like many other methods of clinical examination is replete with error. It seldom gives a pathognomonic diagnosis, but often gives a protosight of data that can be detected in no other way. Its limits of usefulness in medicine are yet undefined; but it has come to be of such importance that scarcely any clinical examination is complete without an examination of the blood. This is especially true of the chronic infectious diseases, and more particularly of tuberculosis.

Anent the blood of tuberculous patients, it is stated by an eminent authority on hematology that while they appear to be profoundly anemic, their erythrocytes are seldom diminished in number, and the hemoglobin is usually up to par, or but slightly below it. The question is therefore then put, "What is the cause of the apparent anemia in tuberculous patients?"

I purpose reporting observations on the blood of fifty tuberculous patients, all in the advanced stage of the disease.

No amount of painstaking or labor was spared to make the work as accurate and reliable as possible. Every possible source of error was eliminated or reduced to a minimum. A diagnosis of tuberculosis of the lungs was positively established by microscopical examination of the sputum. That the exact extent of the disease might be known, and no other pathological process present to influence the elements of the blood, a thorough physical examination was made. Especial attention was paid to cavity formation, to determine the presence or absence of leucocytosis in such conditions. The technique was essentially that detailed in Cabot's work on the blood.

Clinical notes were taken on such points as age, sex, duration of illness, family history, presence or absence of hemoptysis or hemorrhages, P.M. temperature, and somatic condition. Unfortunately the patient's word had to be taken as to the family history; but for our purpose this is not important.

In the microscopical examination of the sputum note was made of the presence or absence of streptococci or staphylococci, for it is stated by Leyden in Musser's Medical Diagnosis that pus microorganisms are not found in the purulent contents of tubercular cavities. They were found in great abundance in each one of these fifty cases. Analysis of sputum showed tubercle bacilli and pus cocci in every case.

[1] Read before the Chicago Academy of Medicine, Dec. 9, 1898.

TABLE OF FIFTY CASES.

No.	Sex and age.	Anamnesis.	Status præsens.	Temperature P.M.	Hemoptysis.‖	Specific gravity of blood.	Erythrocytes per cubic millimeter.	Percentage of erythrocytes.	Percentage of hemoglobin.	Corpuscle index.	Leucocytes per cubic millimeter.	Percentage of leucocytes.	Microscopical examination of stained specimens.	Blood Diagnosis.	Remarks.
1	F., 58	Duration of illness 4 months. (—)†	Bilateral; cavities.	101°	A	1037	5,432,000	120.7	41	33.9	7,980	106.4	Poikilocytes, oligochromemia, normoblasts and small lymphocytes increased.	Chlorosis.	Asthenic.
2	F., 35	1 year. (+)*	Bilateral; cavities.	103°	A	1055	3,200,000	71	65	91.5	23,520	313.8	Poikilocytosis, oligocythemia, adult lymphocytes.	Secondary anemia.	
3	F., 64	18 months. (—)	Bilateral; cavities.	100°	P	1056	4,560,000	100.3	60	59.2	11,760	156	Oligochromemia, poikilocytes, lymphocytes and normoblasts increased.	Chlorosis.	
4	F., 22	1 year. (—)	Bilateral; cavities.	100°	A	1034	5,339,111‡	118.6	55	46.3	9,450	126	Oligochromemia, poikilocytes, lymphocytosis.	Chlorosis.	Syphilitic.
5	M., 35	18 months. (—)	Bilateral; no cavities demonstrated.	100°	P	1055	3,632,000	72.6	50	68.8	13,020	173.6	Poikilocytosis, oligochromemia, normoblasts, adult leucocytes increased.	Secondary anemia, leucocytosis.	Colored.
6	M., 51	18 months. (—)	Bilateral; cavities.	100.4°	P	1050	3,480,000	69.6	71	102	35,490	506.8	Oligochromemia, poikilocytosis, leucocytosis.	Secondary anemia.	Asthenic; hemorrhage preceding evening.
7	M., 43	14 months. (—)	Bilateral; cavities.	98.6°	P	1046	3,984,000	79.6	73	91.7	13,125	175	Poikilocytosis, oligochromemia, leucocytosis.	Secondary anemia.	
8	M., 53	5 years. (—)	Unilateral; cavities.	99°	P	1035	4,272,000	85.4	45	52.6	15,485	206.4	Poikilocytosis, oligochromemia, leucocytosis	Secondary anemia.	
9	M., 39	2 years. (+)	Bilateral; no cavities demonstrated.	98.6°	A	1037	5,200,000	104	71	68.2	16,065	214	No marked necrobiotic changes, leucocytosis.	Lymphocytosis.	

*(+)=family history tuberculous. †(—)=family history negative. ‡Five examinations. ‖A=hemoptysis absent; P, present.

TABLE OF FIFTY CASES—*Continued.*

No.	Sex and age.	Anamnesis.	Status præsens.	Temperature P.M.	Hemoptysis.	Specific gravity of blood.	Erythrocytes per cubic millimeter.	Percentage of erythrocytes.	Percentage of hemoglobin.	Corpuscle index.	Leucocytes per cubic millimeter.	Percentage of leucocytes.	Microscopical examination of stained specimens.	Blood Diagnosis.	Remarks.
10	M., 53	2 years 8 months. (—)	Bilateral; cavities.	98.6°	P	1055	4,640,000	92.8	55	59.2	11;550	154	Poikilocytosis, oligochromemia, normoblasts, and leucocytosis.	Secondary anemia.	
11	M., 39	14 years. (—)	Bilateral; cavities not demonstrated.	98.4°	P	1065	3,928,000	78.5	80	101.9	9,660	128.8	Poikilocytosis, oligochromemia, irregularity in size of erythrocytes.	Secondary anemia.	
12	M., 47	10 months. (—)	Bilateral; cavities.	99°	P	1040	4,600,000	92	50	54.3	7,560	100.8	Marked necrobiotic changes, oligochromemia.	Chlorosis.	
13	M., 33	4 years. (—)	Bilateral; no cavities demonstrated.	100.4°	P	1045	4,696,000	93.9	56	59.5	14,070	187.6	Poikilocytosis, oligochromemia, adult leucocytes increased.	Secondary anemia.	Five hemorrhages.
14	M., 46	3 years. (+)	Bilateral; no cavities demonstrated.	98.6°	A	1060	5,000,000	100	71	71	18,480	246.4	No well marked necrobiotic changes; leucocytosis.	Leucocytosis.	
15	M., 45	1 year. (+)	Bilateral; cavities.	100°	A	1035	4,144,000	82.8	45	54.3	22,680	302.4	Poikilocytes, oligochromemia, lymphocytosis, and leucocytosis.	Chlorosis, leucocytosis.	
16	M., 30	18 months. (+)	Bilateral; cavities.	102.6°	A	1047	4,096,000	81.9	43	52.5	19,530	260.4	Poikilocytes, oligochromemia, lymphocytosis, and leucocytosis.	Chlorosis, leucocytosis.	Laryngeal tuberculosis.
17	M., 56	1 year. (—)	Bilateral; cavities.	98.6°	A	1050	4,560,000	91.2	70	76.7	18,060	240.8	No necrobiotic changes; leucocytosis.	Leucocytosis.	
18	M., 40	1 year. (+)	Bilateral; cavities.	100.4°	P	1054	4,112,000	82.2	65	79	18,900	252	Poikilocytosis, oligochromemia, irregularity in size of erythrocytes, leucocytosis.	Secondary anemia, leucocytosis.	

19	M., 57	5 years. (+)	Bilateral; cavities.	100°	P	1055	4,976,000	99.5	60	60.3	18,690	249.2	Poikilocytosis, oligochromemia, normoblasts, leucocytosis.	Diarrhea.	
20	M., 43	2½ years. (—)	Bilateral; cavities.	99°	P	1055	4,288,000	85.7	75	87.5	12,810	170.8	Poikilocytosis, leucocytosis, normoblasts.	Secondary anemia, leucocytosis.	Has had hemorrhages.
21	M., 21	3 years. (—)	Bilateral; cavities.	99°	P	1050	4,736,000	94.7	65	68.6	14,910	198.8	Poikilocytosis, oligochromemia, normoblasts, leucocytosis.	Secondary anemia, leucocytosis.	2 hemorrhages.
22	M, 28	2 years. (—)	Bilateral; cavities.	101.6°	A	1060	5,205,600	104.1	63	60.5	10,920	145.6	Poikilocytosis, oligochromemia, normoblasts, leucocytosis.	Secondary anemia.	Chronic diarrhea.
23	M., 63	3 years. (+)	Unilateral; no cavities demonstrated.	98.6°	P	1035	4,160,000	85.2	50	60	27,090	361.2	Poikilocytosis, oligochromemia, normoblasts, leucocytosis.	Secondary anemia, leucocytosis.	Cold abscess at sternum.
24	M., 35	2 years. (—)	Unilateral; no cavities demonstrated.	99.4°	P	1055	4,240,000	84.8	75	88.4	11,760	156.8	Poikilocytosis, normoblasts, leucocytosis.	Secondary anemia.	Paraplegia.
25	M., 24	4 months. (—)	Unilateral; cavities.	104°	A	1045	3,056,000	61.1	50	81.8	11,340	151.2	Poikilocytosis, oligochromemia, normoblasts, leucocytosis.	Secondary anemia, leucocytosis.	Diarrhea acutis.
26	M., 38	8 years. (—)	Bilateral; cavities not demonstrated.	102.6°	A	1060	4,320,000	86.4	72	83.3	17,220	229.6	No necrobiotic changes, leucocytosis.	Leucocytosis.	Constant emesis.
27	M., 23	1 year. (—)	Bilateral; cavity in apex.	100.6°	P	1052	4,640,000	92.8	75	80.8	22,260	296.8	Poikilocytosis, normoblasts, leucocytosis.	Secondary anemia, leucocytosis.	Hemorrhages.
28	M., 40	3 years. (+)	Bilateral; no cavities demonstrated.	99.2°	P	1058	5,091,000	101.8	77	75.6	19,950	266	No necrobiotic changes, leucocytosis.	Leucocytosis.	
29	M., 32	1 year. (—)	Unilateral; no cavities demonstrated.	99°	A	1055	4,864,000	97.2	78	80.2	7,500	100	No necrobiotic changes, leucocytosis.	Normal.	Well nourished.

TABLE OF FIFTY CASES—*Continued.*

No.	Sex and age.	Anamnesis.	Status præsens.	Temperature P.M.	Hemoptysis.	Specific gravity of blood.	Erythrocytes per cubic millimeter.	Percentage of erythrocytes.	Percentage of hemoglobin.	Corpuscle index.	Leucocytes per cubic millimeter.	Percentage of leucocytes.	Microscopical examination of stained specimens.	Blood Diagnosis.	Remarks.
30	M., 60	2 years. (+)	Unilateral; no cavities demonstrated.	99°	P	1052	4,064,000	81.2	85	105.2	12,810	170.8	No necrobiotic changes; leucocytosis.	Leucocytosis.	Well nourished.
31	M., 32	4 years. (—)	Bilateral; cavities.	100.6°	P	1055	4,744,000	94.8	74	78.1	12,390	165.2	No well-marked necrobiotic changes; eosinophilic leucocytosis increased.	Leucocytosis.	Hemorrhage.
32	M., 46	6 years. (—)	Unilateral; cavities.	99.6°	P	1055	4,208,000	84.1	68	80.3	12,390	165.2	No necrobiotic changes.	Leucocytosis.	Hemorrhages 3 weeks ago.
33	M., 44	3 months. (—)	Bilateral; cavities.	102.2°	P	1025	2,896,000	57.9	53	91.3	12,810	170.8	Poikilocytosis, oligochromemia, megoloblasts, and normoblasts.	Secondary anemia.	26 hemorrhages in two weeks occurred 11 weeks ago.
34	M., 68	1½ years. (+)	Bilateral; cavities.	98.6°	A	1048	4,080,000	81.6	70	85.7	5,590	74.5	Marked poikilocytosis, eosinophiles abundant.	Secondary anemia.	Very asthenic.
35	M., 28	1 year. (+)	Unilateral; no cavities demonstrated.	?	P	1055	4,336,000	86.7	80	92.1	8,190	109.2	No necrobiotic changes.	Normal.	
36	M., 35	1 year. (—)	Bilateral; no cavities demonstrated.	100°	A	1040	4,560,000	91.2	50	54.8	10,710	142.8	Poikilocytosis, oligochromemia, eosinophiles increased.	Secondary anemia.	Colored; asthenic; laryngeal tuberculosis.
37	M., 40	3 years. (—)	Bilateral; no cavities demonstrated.	100°	A	1050	4,304,000	86	62	72	11,340	157.2	Poikilocytosis, eosinophilia, normoblasts.	Secondary anemia.	Hemorrhage, diarrhea.
38	M., 32	2 years. (—)	Unilateral; no cavities demonstrated.	99.6°	P	1055	4,966,000	99.3	70	70.4	7,980	106.4	Leucocytes pigmented, poikilocytosis, eosinophiles increased.	Mild anemia.	Addison's disease.

39	M., 23	2 months. (—)	Unilateral; no cavities demonstrated.	99.8°	P	1055	5,312,000	106.2	80	75.3	11,550	154	No marked necrobiotic changes.	Leucocytosis.	
40	M., 19	1 year. (+)	Bilateral; cavities.	100.8°	A	1055	4,112,000	82.2	53	64.4	12,390	165.2	Poikilocytes. oligochromemia, leucocytosis.	Chlorosis.	
41	M., 22	3 months. (—)	Bilateral; cavities not demonstrated.	102.8°	A	1052	3,824,000	76.5	45	58.8	6,825	91	Poikilocytes, oligochromemia, normoblasts, and lymphocytes.	Chlorosis.	Colored; asthenic.
42	M., 35	4 years. (—)	Unilateral; cavities not demonstrated.	99.4°	A	1055	5,072,000	101.4	75	73.9	12,820	170.9	No necrobiotic changes; leucocytosis.	Leucocytosis.	
43	M., 47	6 years. (+)	Bilateral; cavities not demonstrated.	99°	P	1052	4,404,000	88	85	96.5	14,070	187.6	No necrobiotic changes; leucocytosis.	Leucocytosis.	2 hemorrhages 6 years ago; well nourished.
44	M., 44	1 year. (—)	Unilateral; no cavities demonstrated.	101.8°	A	1055	5,440,000	108.8	75	68.9	5,880	78.4	Hypoleucocytosis; no necrobiotic changes.	Hypoleucocytosis.	Emaciated.
45	M., 60	1½ years. (—)	Unilateral; cavities.	99.2°	P	1035	3,824,000	76.5	50	65.4	10,920	145.6	Poikilocytosis, oligochromemia, normoblasts, and lymphocytes diminished.	Secondary anemia.	Very asthenic, diarrhea.
46	M., 37	6 months. (—)	Bilateral; cavities.	103°	P	1040	2,848,000	56.9	30	52.7	13,440	192.5	Poikilocytosis, oligochromemia, lymphocytes, and normoblasts.	Secondary anemia.	Very asthenic.
47	M., 43	4 years. (+)	Bilateral; no cavities demonstrated.	99°	P	1055	4,768,000	95.3	75	78.6	16,590	221.2	No well marked necrobiotic changes; leucocytosis.	Leucocytosis.	Hemorrhage.
48	F., 33	1 year. (—)	Bilateral; no cavities demonstrated.	104°	P	1055	3,856,000	85.6	47	54.9	32,130	428.4	Poikilocytosis, oligochromemia, adult leucocytes increased.	Secondary anemia, leucocytosis.	Epilepsy; hemoptysis severe of late.
49	F., 35	3 years. (+)	Bilateral; cavities.	101.2°	P	1045	3.344,000	74.3	29	39	16,690	222.5	Poikilocytosis, oligochromemia,normoblasts,adult leucocytes increased.	Secondary anemia, leucocytosis.	Asthenic.
50	F., 27	4 months. (—)	Bilateral; cavities.	104°	A	1045	2,608,000	57.9	40	69	8,820	117.6	Poikilocytosis, oligochromemia, normoblasts.	Secondary anemia.	Asthenic.

Hemoglobin.—Two methods of estimating the percentage of hemoglobin were resorted to—that by Fleischl's hemometer, and Hammerschlag's specific gravity test. In these cases Fleischl's instrument was more accurate. The specific gravity test invariably registered too high a percentage. The best chemicals were used with an accurately tested Squibb's urinometer. Repeated tests were made and by different persons with the same results. The corpuscle index was estimated from the percentage of hemoglobin as read from Fleischl's instrument. It is to be regretted that there is no more accurate method of estimating the true percentage of the hemoglobin.

Jellinek, in Germany, has been experimenting of late with an instrument called Jolle's ferrometer. It is an instrument for estimating the amount of iron in the blood. He reports eight cases of secondary anemia in which the hemoglobinometer gave readings much higher than those recorded by the ferrometer, and suggests that poorly oxidized blood may give a higher hemoglobin percentage than the amount of iron present will warrant.

The hemoglobin percentage in these cases was far below normal in every instance, notwithstanding a new instrument was used, which always reads higher than one long in use. The blood was always very dark and watery, being difficult to save till taken.

Chlorosis was met with in eight cases. Notwithstanding that chlorosis is seldom met with in males, five of these eight cases were in male patients. It is a fact that no hard and well defined line is drawn between mild cases of secondary anemia and chlorosis, but from the classical symptoms laid down for chlorosis these cases would most certainly more properly come under chlorosis. The percentage of hemoglobin was very low, even to oligochromemia. The erythrocytes but slightly diminished in number, and smaller in size than normal, with now and then well marked necrobiotic changes. There was always leucocytosis, which is not usually true of uncomplicated chlorosis.

Leucocytes.—There is always a leucocytosis if cavities are present, and the vital resistance of the patient not too low. The number of leucocytes will be in proportion to the virulency and extent of the septic process and the vital resistance of the patient. If the septic process is extensive and the patient extremely asthenic, there will be hypoleucocytosis. Cavities were demonstrated in twenty-eight of these cases. Of this number, twenty-six had marked leucocytosis; the other two were very asthenic. The white cells were greatly increased in nineteen of the twenty-two remaining cases in which

cavities were not demonstrated. The remaining three were also asthenic. Therefore, leucocytosis occurred in forty-five of the fifty cases. Pathological leucocytosis is therefore diagnostic of cavity formation, though the cavity cannot be demonstrated by physical examination. The absence of leucocytosis precluded cavity formation in fairly sthenic cases.

In cases of chlorosis there is lymphocytosis. In secondary anemia the adult lymphocytes are the more numerous. Polymorphonuclear neutrophiles are abundant in septic cases. If there is an asthmatic or dysphonetic condition the eosinophiles will be increased. Such was the observation in these cases. Ehrlich's triple stain was used in the preparation of the slides. Neusser's granules were seen in a number of cases, but were not constantly present, or could not be detected from the granular appearance of the eosinophiles. They appear as separate bodies, lying in the protoplasm immediately around the nucleus, and are most commonly seen in the mononuclear variety. They are considered by Neusser to be peculiar to chronic tuberculosis and indicative of the uric acid diathesis. Among the cases was one of Addison's disease. In this case the leucocytes were all more or less granular, the granules being finer than those seen on the eosinophiles, and darker, like small grains of powder.

Erythrocytes.—Well defined necrobiotic changes were noted in thirty-six of the fifty cases. Of these thirty-six cases twenty-eight had secondary anemia. Both hemoglobin and the number of erythrocytes were diminished, with necrobiotic changes in the erythrocytes, such as irregularity in size, none being larger than normal, while some were normal and others showed poikilocytosis, oligochromemia, and oligocythemia, together with a diminished number of young lymphocytes and an increased number of adult lymphocytes and normoblasts. The degree of such change was, of course, varied, and there was usually leucocytosis, which is almost always true of secondary anemia.

Recapitulation.—The hemoglobin was far below normal in each of these cases. Chlorosis was met with in eight patients. In these eight cases there was oligochromemia, normal or nearly normal number of erythrocytes, diminished diameter of erythrocytes, with occasional necrobiotic changes, lymphocytosis, normoblasts, and diminished number of adult lymphocytes and low corpuscle index.

Leucocytes.—Forty-five of the fifty cases had pathological leucocytosis. Cavities were demonstrated in twenty-eight cases; twenty-six of these showed great increase in the number of white cells.

Nineteen of the remaining twenty-two cases also had leucocytosis, though no cavities were demonstrated. Leucocytosis is diagnostic of cavity formation if the vital resistance of the patient is maintained. The absence of leucocytosis precludes cavity formation. There will be a pathological leucocytosis in proportion to the extent and virulency of the septic process and the vital resistance of the patient. If the septic process is extensive and the vital resistance of the patient low, there will be a hypoleucocytosis. If there is an asthmatic or dysphonetic condition, the eosinophiles will be increased. If a septic condition is present, the polymorphonuclear neutrophiles will be in abundance, especially in the sputa. Young lymphocytes are diminished in secondary anemia, the adult ones are increased. Neusser's granules can be seen in some cases if Ehrlich's triple stain is used. The leucocytes in Addison's disease show fine dark granules.

Erythrocytes.—Thirty-six of the fifty cases were anemic. Twenty-eight had secondary anemia, showing oligocythemia, oligochromemia, poikilocytosis, normoblasts, and increased adult lymphocytes. Streptococci and staphylococci were found in the sputa of each of these cases. Of these fifty tubercular patients, 72 per cent were anemic.

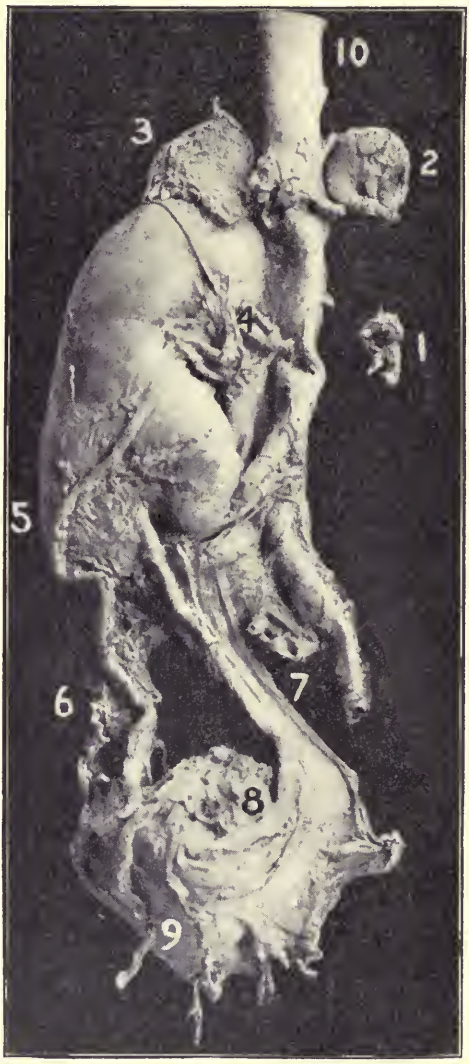
DUNNING SUBSTATION, CHICAGO, ILL.

REPORT OF A CASE OF DOUBLE OR FUSED KIDNEY.

BY GEO. BOODY, M.D., INDEPENDENCE, IOWA.

The autopsy was upon a male, aged 65 years, a native of Canada, a farmer by occupation, who had suffered from melancholia with an assigned cause of la grippe. The duration of the mental disorder was four years, and the clinical diagnosis pulmonary tuberculosis. The body was greatly emaciated, with partial *rigor mortis*, most marked in the toes and ankle-joints. The lungs showed extensive tubercular invasion, and microscopic examination of the exudate from the cut surfaces showed tubercle bacilli in great number. The heart was dilated; there was marked compensatory hypertrophy, and only slight atheromatous changes in the valves.

The special points of interest were: The presence of a small adrenal on the left side in its normal location, as shown in the accompanying illustration, and the entire absence of the kidney on that side. In the region where the kidney should have been was a small round body, one-fourth inch in diameter, which was thought to be a diminutive, non-functionating kidney, there being no blood-supply to it direct from the aorta and no ureter; but microscopic section showed it to be a supernumerary spleen. It was farther removed from the spleen, which in this subject was normal in size and appearance, than such bodies, which are quite common, usually are. The adrenal on the right side was much larger than the one on the left, as is nicely shown. The right kidney was large, measuring five and one-half inches in length, three inches in its greatest width, and two and one-fourth inches across its narrowest portion. Over its upper half was a depression with an average diameter of one and one-fourth inches, the innermost edge of which corresponded to the internal border of the kidney. From this pelvis originated a ureter, which passed downward and outward to the right, over its anterior surface, and left it at the junction of the external with the inferior border. From this on it took a rather tortuous course across the common iliac artery at its bifurcation, and finally entered the bladder at the usual point. On the lower portion of the inferior half of the kidney was a depression one and one-half inches in diameter, and from this pelvis originated a ureter which passed downward and outward to the left through the pelvic tissue, across the right common iliac artery at a point one and one-half inches below the bifurcation of the aorta. After reaching a point a little to the left of the border, it turned to the right and opened into the bladder at about the



1, Supernumerary spleen; 2, left adrenal; 3, right adrenal; 4, superior pelvis; 5, inferior pelvis; 6, right ureter; 7, left ureter; 8, prostate; 9, posterior wall of bladder; 10, aorta.

normal place. In order that the ureters could be better traced in the illustration the fundus of the bladder was turned down, and hence only the posterior wall is in view. At the most superior portion and between the ureters is the body of the prostate. The artery supplying the upper portion of the kidney, celiac axis, and that which was distributed to the lower portion originated one and

one-half inches above the bifurcation of the aorta. The aorta, kidney, ureters, and bladder were removed with a view of disturbing their relations as little as possible, and after being carefully mounted were preserved in a ten-per-cent solution of formalin.

Gould and Pyle in their work quote Ballowitz's record of 213 cases of entire absence of one kidney, and in this mention is made of fused kidneys, but the number and description are wanting. They also state Sandifort has reported one case of double kidneys and double ureters, but no illustration or minute description is given; they state that supernumerary kidneys are not uncommon, and they are quite familiar with horseshoe kidneys of a kind where two normal kidneys are united.

In 218 autopsies in the past three years supernumerary kidneys appeared once, supernumerary spleen twice, entire absence of a kidney once. An absence of kidney, excepting the atrophied ureter, vessels, and capsule on the right side, was seen in a male 80 years old, in whom the left kidney was greatly enlarged. Altogether, the writer has carefully observed more than 500 necropsies made by Drs. E. H. Bradley, former assistant at the Illinois Eastern Hospital; Adolph Meyer, former pathologist to the same hospital; and A. M. Barrett, pathologist to the hospital at Independence, Iowa. These observations include my service. In this number, double or fused kidney with two pelves and two ureters, as herein described, has occurred but once. From the foregoing it would appear that such kidneys do not occur as commonly as has been supposed.

AMEBIC DYSENTERY OF ARMY ORIGIN.

BY FRANK WEBSTER JAY, M.D, CHICAGO, ILLINOIS.

The word dysentery recalls to an army surgeon of the civil war vivid reminiscences of a disease which proved in this, as in other wars, a greater cause of death and suffering than the bullets of the enemy. One is surprised at the varied drugs found of service in its treatment. It is perplexing to hear how the remedies one considered to have been of benefit differed from those which favorably impressed another.

The civil war was fought too far north to bring the camps into the realm of the ameba coli. The experience of thirty-five years ago in the treatment of dysentery is of no service in dealing with the great majority of the cases of this disease which occurred in the war with Spain, as these were due to the ameba coli. Our more intimate relations with Cuba will in the future compel us to deal with a disease which has, in the past, chiefly interested those in the States farthest south. Before the Spanish-American war, Northern physicians had seen only isolated cases of amebic dysentery, and the disease was regarded as a rarity. Returned soldiers have distributed a number of cases about the country. The physicians under whose care they have come will bear testimony to the obstinacy of the affection.

Amebic dysentery is not a self-limited disease from which the patient, if carried over a certain period, will recover; it is a disease which demands active, direct, and persevering treatment. The ameba must be expelled or destroyed before a cure can be effected.

There are features in this disorder which make the testimony of a physician who has had the disease, and been subjected to prolonged and varied treatment, of value. The colon is not a test-tube or a retort, and various methods of treatment which are theoretically of value and recommended in text-books prove harmful in their application. The environment of the amebæ gives them certain advantages which should be kept clearly in mind when treating a case.

The physician whose experience I will attempt to briefly relate reached Tampa on the 16th of July. He is of average intelligence and some experience. His total ignorance of the formalities of military medicine was acknowledged to the officer to whom he reported, but he was assigned at once to the full charge of a regiment. The red tape which binds the hands of one in this position is familiar to all. He found a sick-list of two hundred men, mostly

suffering from typhoid and dysentery. There was one small tent in which twenty sick could be crowded. There were no cots, no bedclothes, no mosquito-netting, no ice, no milk, nor anything which could be used as a liquid diet. During the following three weeks he did not succeed in getting any of the above articles. It was difficult to imagine himself in a civilized country, when at night he went into that tent and gazed upon a dozen or more brave fellows lying upon the rough board floor, using the only blanket they possessed to keep the mosquitos from their faces and necks. Many of them were in a high fever. They could not remove their clothes, even their shoes, because of the mosquitoes, though the heat was intense, and one was most comfortable naked under a mosquito-netting. There was no commode or bedpans, and the sick were compelled to walk some distance to a sink. They were transferred to the Division Hospital as soon as possible, sometimes to be returned with the information that there was no room there. For three weeks no superior medical officer entered the camp to see and instruct, although the brigade surgeon was but one-quarter of a mile away. The meager stock of drugs was replenished with difficulty, and several times a day or two would elapse during which he was without the most essential remedies. That articles needed were not received may have been in some degree owing to his inexperience, but that had been acknowledged and could have been overcome if his superior had offered suggestions or even given advice when it was requested. He had one steward, who possessed the little knowledge that is dangerous, and one orderly of no experience. He became an actor in a burlesque practice of medicine which became a tragedy. His failure to secure what was needed did not appear to be due to the feeling which is said to have existed between the officers of the medical department of the regular army and those in the volunteers. That he did not receive what necessity demanded is no proof that these things were not to be had. In fact, the opposite was demonstrated after he had been with the regiment three weeks, when a regular medical officer of ten years' service was assigned to duty. This man knew what he was entitled to and soon converted the regimental hospital into an establishment fit for the reception and care of sick men.

It would appear that much of the difficulty during this war regarding medical supplies resulted from the failure of experienced officers to instruct and advise those men who volunteered for service; the latter were only anxious to do what they could. They acknowledged their ignorance of the absurd system that embarrassed them,

and they were in many instances men fresh from extensive and prolonged hospital experience, and could have been of service if the advice they were anxious to receive had been given. As it was, the indifference of the men whose knowledge of the peculiarities of military medicine was in many instances their most conspicuous accomplishment resulted in unnecessary suffering for the soldiers, by depriving them of the services of volunteer surgeons anxious to help.

The extent to which amebic dysentery prevailed among the troops at Tampa was frightful. The possibility of infection by the hydrant water was slight, but the open sinks gave the flies abundant opportunity to infect the food. The flies at Tampa were more numerous and ravenous than the imagination can picture, especially among the cavalry brigade. The latter, in addition to the presence of the horses, were encamped in a swamp and forced to remain there from the middle of June to the middle of August. Subsoil water was met eighteen inches from the surface, and there was no possibility of keeping the material in the sinks covered, to prevent access of flies. Consequently, typhoid fever and amebic dysentery were rife among the men of the cavalry brigade, in spite of all the precautions that could be carried out under the circumstances. The real cause of suffering and death, the location of the camp, was not removed. The cavalry brigade was placed near the railroad to facilitate transportation, and the railroad unfortunately ran through a swamp.

Amebic dysentery is so insidious in its onset, and the sufferer can keep up and about for so long, that it does not claim special attention for some time. Even when a soldier observed that he was passing blood, which always alarms, he found comrades to calm his fears with some such contemptuous remark as, "That's nothing; I've been passing blood for a week." Soldiers delight in exhibiting "nerve" among their fellows. While the troops at Tampa were under orders to go to the front, the men, in their anxiety to accompany their regiments, would make light of or conceal any affection which did not completely disable them and which they feared would, if known to the surgeon, cause them to be sent to the Division Hospital and left behind. They would beg that quinine be tried for another day, for they were sure it was only ague, and it was no uncommon sight to see a poor fellow faint while assuring the questioning surgeon that he felt "pretty good." This was the case among the regulars, and no doubt the same was true of the volunteers. It can readily be seen that this spirit is of some importance

in military medicine; it certainly makes it difficult to arrive at accurate statistics of such a disease as amebic dysentery when so little reliance can be placed upon the sick-roll. Microscopical examination is necessary to reveal the cases due to the ameba. It is only possible to form conclusions regarding the matter from surmise and general impression. Soldiers would come to "sick-call" who were evidently sick, but not there willingly; they would recite their symptoms without mentioning diarrhea or bloody stools. Questioned regarding them, they would answer reluctantly that they did have to go to the rear pretty often and did pass some blood. Such a statement from one who has been in camp for some weeks at Tampa in summer means amebic dysentery. Many so affected did not report at all, for the reasons mentioned.

I was acting as regimental surgeon in the cavalry brigade at Tampa for some weeks; about one-fifth of the regiment had the classic symptoms of amebic dysentery, but this does not begin to represent the number infected. I talked with many soldiers who were undoubtedly suffering from the disease, whose names had not appeared on the sick-roll. I feel that it is no exaggeration to assert that when the regiment left Tampa about the middle of August, after having been in camp there two months, one-third of the command had the disorder; in fact, I feel that this does not cover the number of cases. What the outcome will be in a large percentage of these cases may be predicted from the results in one case which left the army to pass through months of the best care and treatment without a cure.

The physician whose case we shall relate resided all his life in Chicago, and his acquaintance with amebic dysentery was not intimate. He had seen amebæ under the microscope and had examined specimens of intestines diseased with them. He had had experience with cases of hepatic abscess with a history of dysentery and had studied the disease in literature. He was ignorant regarding the insidious, though persevering, manner in which the ameba sets about and accomplishes its pathogenic purpose, as all must be who have not been its host.

The water at Tampa has a laxative action from the presence of magnesium salts, and it was difficult to find an officer or private who was not attacked sooner or later with some degree of diarrhea. The first effect of amebic infection was usually attributed to the action of the water, and excited no particular attention. The physician had been on duty about ten days when he discovered that the prophecy made by his new acquaintances had been fulfilled, for he had a diar-

rhea. It was apparently a slight attack and caused no particular discomfort. He took half an ounce of castor oil and followed this with several three-grain doses of calomel. After the effects of the castor oil had subsided he realized that this was not a simple case of diarrhea. He had several times in each twenty-four hours, at more or less regular intervals, a semisolid movement which caused no discomfort. From three stools a day the number gradually increased, during the first week. A milk diet was adopted, though not strictly adhered to. During the second week he began to be disturbed at night. Later, when completely disabled and confined to bed continuously, the passages were more frequent, and he was suffering greatest during the night. This was probably due to the food taken during the day, as the ameba coli, unlike the filaria sanguinis hominis, probably exhibits no special nocturnal activity.

During the second week the stools were small in amount and caused little discomfort. This is evident from the fact that the first blood-stained mucus was discovered after an eight-mile ride on horseback, with eight miles to return. This ride to camp was filled with visions of peritonitis, perforation, death, post-mortem examination, and pathological specimens. Each collision with the saddle was a mental shock. During the third week the stools increased in number to five or six a day, each consisting of about a tablespoonful of bloody mucus, though the amount was greater and discomfort more when other food than milk was taken. Though he still continued to attend to his duties during the day, at night he was forced to arise from the cot as soon as he returned to it. This was repeated until loss of sleep overcame the amebic irritation. At the end of the third week he sometimes had fifteen stools before falling asleep, each followed by painful tenesmus.

The movements during the fourth week increased in number to about one each hour; the calls were imperative and evacuations painful. At the end of the month's illness he had not missed a day from his frequently interrupted duties. Save loss of sleep, strength, and weight, he did not feel especially sick. From the beginning he had taken drachm doses of bismuth at frequent intervals, sometimes once an hour, and one-quarter of a grain of opium, often enough to dull pain and diminish peristalsis. He smoked much, tried to think of something pleasant, longed for the front while going to the rear, and was stimulated by daily assurances that the regiment would sail to-morrow. He would then see a battle with the Spaniards and go home to engage the amebæ in his colon. He was foolish, but there were other army surgeons at

Tampa with amebic dysentery acting the same way. How many officers and men were concealing the same affection it is impossible to state. The intellectual atmosphere of a military camp in time of war, when waiting to go to the front, would cause the most sensible man to philosophically conclude that we die but once; it is most peculiar, as those will testify who have had the experience.

He had gained but little experience which was of practical value, but was now able to instruct himself, during the long lonely nights, by palpating his tender abdomen. He could feel the inflamed and thickened wall of the colon from cæcum to sigmoid—a firm resisting structure like a large rope, exquisitely tender. As his abdominal wall was now thin and relaxed and intestines empty, he could map out round, indurated areas the size of a dime, in the anterior wall of cæcum and sigmoid, which were no doubt ulcers. At the end of the month's illness he took to his bed; he was sick and longed for home. The few minutes between the passages did not give the tenesmus time to cease before enough blood and mucus had accumulated to excite another movement; the abdomen was exquisitely tender over the colon.

Ipecac and opium in full doses made him worse. They destroyed his appetite, but that was a blessing, for during the month's illness the greatest suffering had been caused by attempting to satisfy the cravings of hunger with a glass of milk. He had been cot-ridden but a few days when the regiment left Tampa. The rest of three days on the train, while traveling to Huntsville, Alabama, placed him on his feet again. He returned to duty at Huntsville, but an immediate relapse dispelled any delusion regarding the temporary improvement, and he left for his home. Five weeks of amebic dysentery, without care or treatment worthy of the name, had reduced his weight thirty pounds. The amebæ had entrenched themselves in the wall of the intestine so well that five months of the best care and treatment have not expelled or destroyed them, nor overcome the damage inflicted.

When he reached Chicago the stools were simply interrupted by intervals of sufficient length to allow of the accumulation of a tablespoonful of bloody mucus. The tenesmus excited by one evacuation had not ceased when another occurred. Every bubble of gas which passed through the ileocæcal valve was evident and distressing. Borborygmus was a great and constant source of discomfort, because being a physician he always associated the sensation with perforation. Microscopical examination revealed enormous numbers of active amebæ. He could now spend a part of each day in studying

the pseudopodia and ameboid movements of the enemy. Dr. James B. Herrick kindly took charge of his colleague.

Enemata of a solution of bisulphate quinine, ten grains to the pint, were given once a day; the rectum would tolerate but an ounce or two of the fluid. Suppositories, each containing a few grains zinc oxide and one-quarter of a grain of opium, lessened the rectal irritability and it became possible to inject and retain more fluid in the bowel. At the end of a week's trial the quinine had accomplished little and the irritation caused by it was increasing. The administration of one-quarter of a grain of calomel three times a day, guarded by one-quarter of a grain of opium, had overcome the intestinal fermentation and distressing borborygmus. A diet of milk and broth was adopted. Ice cream was most refreshing, and a quart or more a day apparently did no harm; it was home-made and nourishing. Two things were soon evident—that absolute rest was imperative and that diet was a most important factor.

The first was accomplished by remaining in bed; the diet problem was met by the sole use of beef juice for a few weeks. The beef juice was prepared in the following manner: Five pounds of round steak was chopped fine, placed in a double boiler, and cooked for three and a half hours. About one pint of juice is secured by straining through a cloth; this is allowed to cool, after which the solidified fat is removed. One pint of this a day will give sufficient nourishment with a minimum of residue. Limiting the diet to it for a time will solve many problems and give an opportunity for local treatment. At the end of a week's trial the quinine enemata were abandoned and a solution of nitrate of silver of the strength of ten grains to a pint used once a day. The first injection demonstrated that those authors who recommend solutions of from twenty to thirty grains to the pint during an acute stage of dysentery do not base their statements upon knowledge acquired by personal experience in its use. In the strength of ten grains to the pint a solution of nitrate of silver injected into an inflamed rectum will cause no pain above the rectum. It excites severe tenesmus, which lasts several hours, and causes a profuse discharge of mucus. More benefit follows the use of solutions weaker than ten grains to the pint, if it is used during the acute stage. It is certain that the stronger solutions of this agent find their only legitimate use in the chronic stages.

In this case these injections were of benefit; but it was necessary to abandon them after a few attempts because of the tenesmus. Quinine solutions were again used with improvement. At the end

of ten days it was possible to inject a quart; that it reached the cæcum was evident from the discomfort it there occasioned, and which led to the quinine being again abandoned after two weeks' use. Peroxide of hydrogen was then used night and morning in the strength of six ounces to the quart. This could only be retained for a moment and could not be carried beyond the splenic flexure, if so high, for the gas set free from a mixture of this strength demands immediate expulsion. Experience resulted in the strength being reduced gradually to two ounces to the quart, the weaker solution being the most useful when a reliable preparation was secured. This could be retained long enough to permit some action, and more fluid could be injected.

These apparently insignificant details proved of the greatest possible importance, and the value of such practical points is fully apparent to one who experiences these results in himself. Enemata of peroxide did great good, relieving soreness in the descending colon, sigmoid, and rectum. The movements decreased in frequency, the blood in amount, and the tenesmus in severity. The peroxide did not reach the ascending colon or cæcum, which remained tender, nor is it probable that peroxide destroys the ameba. After a week's trial of two peroxide injections daily, the method of attack was changed by using an enema of peroxide in the morning and quinine in the evening (each in the strength mentioned). This proved the best plan that had been tried and seemed to solve many of the difficulties. This was followed during the next three months with a gradual, though slow, improvement. A cure has not yet been accomplished, although one injection a day, alternating peroxide and quinine, controls the movements, when care is exercised regarding the diet. In combining peroxide with quinine the former exerts a beneficial influence upon the rectum, sigmoid, and descending colon, besides emptying this part of the intestine; the quinine attacks the ameba.

After several weeks' use of these enemata it was possible to inject as much as three pints of the quinine solution. Experience soon taught that the fluid was more certain to reach the cæcum when care was taken not to inject enough to excite intestinal contraction. It became evident to him that great benefit resulted from keeping the left large intestine empty of infecting and irritating fecal matter by using small enemata of sterilized water at frequent enough intervals to prevent voluntary evacuations. These injections, like the medicated ones, should be administered hot, and it should be the endeavor in every severe case of amebic dysentery to

control the situation at as early a date as possible by frequently repeated flushings; an evacuation should never be excited by the accumulation of feces. Besides preventing the accumulation of infected feces in the intestine, they empty the bowel without causing the harmful tenesmus which follows voluntary movements. The frequent, though not excessive, distention of the colon tends to prevent cicatricial contraction. The ascending colon must be flushed sufficiently often to prevent feces from becoming hardened, as they cause trouble because of the diminished expulsive power of the long inflamed intestine and the irritation of the retained fecal masses. Injections of peroxide of hydrogen, alternated with a solution of quinine twice daily, give best results and most comfort. Much of the blood and mucus comes from the sigmoid and rectum, and these are the seat of most discomfort, although not of the greatest danger. Medicated suppositories should always be used for the rectal distress, inserting them after the enemata.

It is impossible to pass a rectal tube into the sigmoid when the rectum is inflamed without more discomfort than the patient can endure and exciting a tenesmus which will prevent colonic flushing. The knee-chest position puts the patient in a strained attitude which will not permit as much fluid to enter the bowel as when the patient lies on the back with the body turned toward the right side, with abdominal muscles relaxed and the pelvis elevated a foot or more. In a strength of ten grains to the pint, the bisulphate of quinine cannot be used more frequently than once a day without causing distressing irritation, especially in the cæcum, where part of the fluid may be retained owing to the sluggish expulsive power of the intestine.

The Pharmacopœia is wofully deficient in remedies which destroy the essential cause of amebic dysentery. Tannate of quinine in five- or even ten-grain doses, administered in pills coated with salol or creatin (enteric pills), is theoretically of service. It is supposed to reach the intestines unaltered. There are therapeutic agents of value in overcoming intestinal fermentation and lessening peristalsis which give some degree of rest to the inflamed bowel; we need an efficient agent that will destroy the amebæ and at the same time be non-irritating and non-toxic. A more thorough study of the affection is needed, as we are destined to see more of it in the future than in the past.

TUBERCULOSIS IN DOGS.

BY WALTER H. SHELDON, CHICAGO.

It is admitted that rabbits, guinea-pigs, cats, and field-mice are susceptible to the bacilli of human tuberculosis. There is a difference of opinion in regard to the extent of the prevalence of this disease among dogs and their susceptibility to it.

Ziegler states that it occurs in dogs exceptionally. Abbott says that "white mice, dogs, and rats possess immunity against the disease;" Osler that "dogs and cats are not prone to the disease;" Carl Günther says that "white mice, rats, hens, and canary-birds are less susceptible to infection than guinea-pigs, cats, and field-mice." Fränkel and Sternberg do not mention tuberculosis in dogs.

Comparatively little is definitely known about the subject, and it becomes a matter of interest and practical value when cases of tuberculosis in dogs can be proven.

Study of the subject in veterinary journals and books treating particularly of diseases in dogs shows, however, that it is more common than is generally supposed. It is important for one to know that the dog, the friend of man, is far from being immune to this disease. In these days, when dogs are fondled by children and are allowed to live to an advanced age for association's sake, there is frequently real danger of the spread of this disease through them.

To indicate how frequently tuberculosis occurs in dogs, it may be mentioned that a request to the Bureau of Animal Industry in Washington for references upon this subject was answered by a list of thirty-four articles, mostly in German and French. This was only a partial list, but over one hundred and fifty cases of tuberculosis were cited, all of which were authenticated by the finding of the bacilli.

Most of these articles are of recent date, and the researches have been carried on in a comparatively small number of laboratories. The following is taken from an article in *Monatshefte für Prakt. Thierheilk.*, 1895, by Froener, entitled "Dreizehn weitere fälle von tuberculose beim hunde." There have been recently published, mostly abroad, one hundred cases of alleged tuberculosis in the dog. Cadiot alone has reported more than forty, Jensen twenty-eight, and Eber eleven; Froener observed twenty-seven during the year 1894, and in his last article announces a series of thirteen more. Froener writes: "In these autopsies the lesions varied according to the age

and the localization of the disease, the organs of the thorax being those most frequently affected. In the thirteen cases the lesions occupied the lungs and pleura eleven times, the liver ten times, the bronchi and ganglia of the mediastinum six times, the pericardium five times, the kidneys three times, and the spleen once; all the organs were involved in one case." He gives a summary of the general pathological appearance of the different organs.

J. H. Steele, in his book on "Diseases of the Dog," published in 1888, writes: "There occur in the dog some disorders of the lungs, mesenteric glands, and other parts of the body, which have all the appearance of tuberculosis, and yet we are not aware of any distinct evidence having been brought forward that true consumption, due to the tubercular bacilli, is ever found in the dog."

A number of cases are cited in the literature where the dog acquired tuberculosis from man. In Friedberger and Fröhner's "Pathology and Therapeutics of the Domestic Animals" we read: "In the dog tuberculosis is not so rare as has been admitted. It is probable that in a majority of cases it is of human origin; the dog contracts it by licking virulent expectorations. We have gathered a few personal observations which testify in favor of this theory. In one case, three dogs belonging to the same owner became infected and died of generalized tuberculosis. The symptoms are those of chronic pulmonary disease with emaciation. In two dogs we have been able to recognize the bacillus in the discharge. In one dog striking improvement resulted from prolonged inhalations of creolin, one-half per cent."

In the *Veterinary Journal* for June, 1889, Austin Peters cites an interesting case of tuberculosis in a dog: "A young dog in the habit of eating the sputa coughed up by the dog's mistress, who had consumption, had seemingly a bad cold, but as it was suspected that the dog might have tuberculosis and might communicate it to the children, it was killed and an autopsy held. Phthisis of both lungs was found, and a large abscess in the posterior lobe of the left lung. Smears were made from walls of the abscess and many tubercle bacilli were found."

M. Neyrand, in *Recueil de Médecine Vétérinaire*, 1894, tells of a setter six years old, emaciated and with no appetite. The owner was a consumptive, and the dog had been seen to eat the sputa of his master. The dog was put under treatment, but after eight months was deemed incurable and killed. Autopsy revealed tuberculosis, and many tubercle bacilli were found.

The case which I wish to add to this already large list was that of

a dog, about eight years of age, which had been sick for two years. There was increasing emaciation, frequent attacks of ascites, and languor. My fellow student, Mr. O. A. Dahms, obtained possession of the dog and killed it. The pericardial sac was distended with fluid, the pericardium much thickened, and with the epicardium was covered with gray and yellow nodules of various sizes. (The heart is now in the museum of the Pathological Laboratory of Rush Medical College.) The lungs were apparently normal. The peribronchial glands were enlarged and the peritoneum adhered in many places; the liver was sparsely covered with grayish nodules. The stomach and the pancreas were apparently normal. Numerous yellowish nodules as large as a pea were present on the spleen. The kidneys showed a limited number of similar nodules.

A piece of a pericardial nodule was inserted into the abdomen of a rabbit.

Sections were made of the liver, pericardium, kidney, and heart of the dog. In the kidneys there was atrophy and considerable necrosis of the epithelial cells lining the convoluted tubules. In the lumen of the tubules there was an accumulation of necrotic material, which stained with eosin and was homogeneous in structure. Many of the blood-vessels were hyperemic and there was considerable proliferation of connective tissue. The sections of the heart showed circumscribed masses, made up of epithelioid and spindle-shaped cells. No giant cells were found, and there was much fibrous tissue.

Sections of the heart, pericardium, and liver containing tubercles were stained by the Ziehl-Nielson-Gabbet method for the bacilli, and large numbers of them were found. Considerable search was necessary to find them in the sections made from the pericardium.

The rabbit which had been inoculated gave birth to young a few days after the inoculation. It soon began to grow thin; the wound in the skin healed, but some enlargement remained. The rabbit was killed six weeks after inoculation.

No remains of the tubercle which had been inserted could be found. The mass at the site of inoculation was composed of little nodules the size of a pin-head, and the whole mass was about half an inch in diameter and an inch in thickness. The kidneys, liver, spleen, heart, pericardium, and lymphatics were normal. The lungs contained numerous small foci from the size of a pin-head to three times this size.

Sections made of the subperitoneal tubercles and of the miliary tubercles in the lungs showed tubercle bacilli in large numbers. A

microscopical examination showed typical tubercles with very few giant cells. From this review and from the study of our case we may deduce the following:

1. Tuberculosis, probably of the mammalian type, is not as rare in dogs as is ordinarily supposed.

2. Dogs are prone to become infected by licking up the sputum of tuberculous patients; the location of the primary point of lodgment in such cases is not yet clear.

3. As shown in the case here described, the gross lesions of tuberculosis in the dog resemble those of the subacute and chronic forms in man, especially when the pericardium is involved. The absence of caseation and the absence in this case of giant cells are, however, points of deviation from the common type of human tuberculosis.

4. Dogs with cough, emaciation, or other symptoms that may be due to tuberculosis, should as a prophylactic measure be killed. They may spread the disease, especially if the lungs are involved.

OTHEMORRHEA.

BY SAMUEL G. DABNEY, M.D.,

Clinical Lecturer on Diseases of the Eye, Ear, Nose and Throat in the Hospital College of Medicine, etc., Louisville, Ky.

Last spring a healthy looking young married woman came to me with the statement that for several months she had been having bleeding from one ear. Coincident with the bleeding, or just previous to it, there was pain in the back of the head; this pain was on the opposite side from the affected ear, at the lower part of the occipital bone. I thought it was purely a coincidence and did not attach much importance to it. Observing the case longer, I found that these symptoms were always associated. There had never been a pus discharge and she gave no history of acute inflammation of the middle ear. She complained of feeling her pulse beat violently in her ear. The loss of blood was never great and it never extended over a long time; perhaps twelve to twenty drops as often as twice a week, or sometimes at intervals of two weeks.

An examination showed a very minute perforation at the upper posterior border of the drum membrane; otherwise the ear seemed healthy. Her hearing was at that time and has continued good. I was puzzled at the unusual character of the case, and am still in doubt as to the origin of the blood.

I treated her at first with an antiseptic wash, then put some iodoform gauze into the ear. Since that time I have seen the case frequently.

After treating her for some weeks the bleeding recurred occasionally, and she came in one day after an absence of two weeks with a distinct vesicle protruding. This sac hung from the upper posterior border of the drum and looked exactly like a blood-blister; it involved perhaps the upper and posterior one-fourth of the drum membrane, and was evidently filled with a sanguinolent fluid, probably blood and serum. I told her that after waiting a day or two, if it did not rupture spontaneously, I would open it. It opened in a few days and she had the usual discharge of blood. I applied some chromic acid on a probe, with little or no effect. There was no diseased bone.

After some months, with this blister returning frequently, the perforation would heal entirely and she would seem apparently cured; some weeks later she would come in and there would be another vesicle, and again I would have to puncture the little blister and there would be another bloody discharge.

The subjective symptoms at these times have been slight, excepting fulness of the ear and violent beating of the pulse, as she expressed it. The fulness in the head has disappeared and the occipital pain on the opposite side of the head is no longer present.

The case is somewhat unusual and certainly very puzzling, particularly as to its peculiar character, occurring as it did in a healthy person. The ear was at all times free from pus, and there was no apparent cause for the condition. The last time I saw the lady the drum looked healthier than it had for some time, and I think she is cured.

The treatment has been mainly the putting in of iodoform gauze from time to time, and the use of various antiseptics, among them nitrate of silver. At one time I carried chromic acid through the perforation, but it was of no apparent value.

A CLINICAL LECTURE IN NEUROLOGY.

BY HAROLD N. MOYER, M.D.,
Assistant Professor of Medicine, Rush Medical College, Chicago.

MYELITIS A COMPLICATION OF TABES.

GENTLEMEN — Observe the gait of the patient that now enters the room. He assists locomotion by two canes; his feet are wide apart, and as they are advanced they have a tendency to slap upon the floor. This is due to weakness of the anterior tibial muscles. The diagnosis of tabes is made at once, by the characteristic attitude and the evident uncertainty in his movements. He is able to walk without the canes, but his uncertainty is greatly increased. If we ask him to walk upon a line drawn upon the floor, we find that he does so very imperfectly at first, but, continuing, he improves perceptibly. This alone demonstrates the importance of educating coordination in these patients. The method of Fraenkel is simply an extension and amplification of what you have seen exhibited by this patient. By this means alone we are sometimes able to get a paretic moving about who has been bedridden for years. The ataxia is very pronounced in the lower extremities, but absent from the upper. Standing with eyes closed he would certainly fall if not supported. He can, however, touch the end of his nose and bring the tips of his fingers together, quickly and accurately, while his eyes are closed. The knee-jerks and triceps-jerk are absent. No response is obtained by striking a muscle; muscular tonus is therefore diminished, but the skin reflexes are decidedly exaggerated. A touch on the inner side of the thigh causes a quick elevation of the testicle. The gluteal and abdominal reflexes are also marked. You note that the gluteal reflex appears also upon the opposite side from that touched, a condition not infrequent in tabes. Vision is not impaired; the eyes move normally. The right pupil is slightly smaller than the left. The pupils contract when the eyes converge for near vision, but there is absolutely no response to light—a typical Argyle-Robertson pupil. A careful testing of the surface of the trunk shows no loss of tactile or temperature sense. In the feet there is some diminution of sensual acuity, but no anesthesia.

The case as it stands is one of typical tabes. We would, however, direct your special attention to the history, which shows a remarkable departure from the usual onset. The patient is a cigar salesman; he has always been temperate. So far as he knows he has never had syphilis. He married when twenty-six years old, and since then has had no extra-marital relations. He never had any

venereal disease, though he admits moderate sexual indulgence prior to marriage. Before the beginning of his present disorder he had always been well. There is no neurotic heredity.

Two and one-half years ago, during a heated term, he drank freely of iced water; soon after he became flushed, had headache, and went to bed. The following day there was marked weakness of the legs and he became totally paraplegic. There was paralysis of the bladder and rectum with incontinence of urine and feces. Later, he says his legs became wasted. For months he was bedridden, and for nearly a year and a half he was in a hospital. After some months he was able to get about in a wheeled chair, and at the end of that time was able to walk a little. He then returned to his home. The paralysis of the bladder and rectum disappeared in about four weeks; the legs filled out gradually.

The benefit of systematic exercise is well shown by the statement of the patient that he improved greatly after his wife became ill and was taken to the hospital. He visited her every day and thinks these efforts at walking greatly improved his locomotion. These exercises, however, must not be carried to the point of fatigue.

Only of late have there been pains; they are not severe, but are stabbing in character. He says there has been fairly steady improvement since he was first attacked.

A consideration of this man's symptoms would strongly point to the original trouble having been a transverse myelitis. The later symptoms of a decidedly tabetic character could be referred to secondary involvement of the posterior columns and posterior root zones. This would easily explain the sudden onset, bladder, rectal, and paraplegic conditions. Certain ocular symptoms preceded the acute attack by some weeks. He is positive that he had diplopia at least three weeks before the disorder began. This symptom alone is, we think, of sufficient importance to enable us to say that the case was tabetic from the beginning. Nothing in the history precludes the idea of a transverse myelitis as an intercurrent complication of tabes. The point I wish to make is, that the patient was clearly a tabetic before the acute symptoms developed. The treatment is not different now from that of an ordinary case of tabes.

UNUSUAL EFFECT OF THE BROMIDES.

Some years ago I called attention to an unusual effect of the bromides. An insane epileptic was under my care at the Illinois Eastern Hospital for the Insane. He had both the *grand mal* and *petit mal* attacks. Comparatively small doses of the bromides sup-

pressed them, but in a few days he became increasingly irritable, and soon ran amuck in the ward and wrecked a room in which he was placed for safety. This case was published, and immediately numerous cases were seen in print, until now this effect of the bromides is generally recognized in the text-books as bromide mania.

The man we now show you is of no special interest from a neurological standpoint, with the exception of the effect of the bromides. In May, 1897, he consulted us for an epilepsy; the attacks were nocturnal and came about every two months. He was put on twenty grains of bromide of sodium three times a day. The attacks were not lessened in frequency, but he began to lose weight; when treatment was first begun he weighed 202 pounds. In December, 1897, about six months after beginning treatment, his weight had fallen to 145 pounds—a loss of 57 pounds. The bromides were then suspended, and he immediately began to gain, his weight in December reaching 198 pounds. He was given twenty grains of bromide of strontium three times a day, in June, 1898, his weight at that time being 200 pounds; by the middle of November it had fallen to 150 pounds. One week ago we stopped the bromides and gave him a simple tonic; he has gained seven pounds in that time. We are unable to find any intercurrent organic affection. There is no cough nor disturbance of digestion. During both of these periods his appetite has been good, and he has taken about the usual quantity of food. This is an effect of the bromides that we do not remember to have noted before. The most frequent change, after their administration, is an eruption of the skin, faucial anesthesia, disturbance of digestion, and decreased mental activity. A simple loss of weight, without other untoward effect, is certainly an exceptional observation. The patient tells us that during the administration of the bromides there was complete loss of the sense of smell; with their suspension this function has returned.

PATHOLOGY OF CHOREA.

This little girl is seven years of age; she is apparently robust, her nutrition is good, and she has a good color. You note that there are slight disorderly muscular movements of left side; this is apparent in the forward swing of the foot as she puts it down. If she places both hands palm downward on the table, there are irregular movements of the fingers of the left hand, while the right remains perfectly quiet. The movements are characteristic of chorea, perhaps the most frequent disorder that comes to our clinic; the so-called chorea of Sydenham. The disorder is confined to the left side of the body—a not unusual circumstance.

My object in presenting this case to you is to specially direct your attention to some points in its history. There is no evidence of rheumatism, nor are there signs of cardiac trouble. You are all aware of the frequency with which we meet these complications in chorea; the association of rheumatism and chorea has been noted for years, and it occurs in a large proportion, perhaps 80 per cent, of cases. I have used the term rheumatism advisedly, as you will note that nearly all of our text-books speak of it in that way. I do not think there is any warrant for regarding these complications as rheumatism in the strict sense of the word. To be sure they present many of the clinical features of that disorder—swelling of the joints, pain, and endocardial murmurs. To my mind the joint complications and endocarditis simply point to an infectious process; whether it is identical with rheumatism we do not know. Many observers think that chorea is an infectious, self-limited disease, and there is much in the history of the affection that would lend support to this view. The name chorea is given by the chief symptom, namely, the disorderly muscular movements. This symptom occurs in conditions having a widely varying pathology: thus Huntington's chorea is a degenerative psychosis, belonging to the family type of nervous disorders; posthemiplegic chorea has a cerebral clot or softening as its antecedent; while that of pregnancy rarely presents the cardiac complications observed in the chorea of early life.

All of these disorders present the same movements, but are essentially different in their pathology; consequently, we are justified in regarding the chorea of childhood as comprising at least two distinct disorders, one dependent upon infection and the other upon fright or other nervous disturbance. To class the complications of the infectious variety with rheumatism, and to speak of the latter as complications, is to ignore the essential unity of the disorder.

The treatment of these two varieties is somewhat different: arsenic is of benefit in both forms, but I believe it is of greater use in the uncomplicated. In those presenting joint or heart complications I never give salicylates, as there is clinical proof going to show that they directly favor cardiac involvement. These cases require rest in bed, elimination, and careful dieting. The milder cases may be safely left to go about. Arsenic, in my experience, is the best remedy in chorea; certainly this is the case if it is given in the form of arsenate of sodium, under the skin, in one-fourth to one-half grain doses.

BOOK REVIEWS.

HISTOLOGY: NORMAL AND MORBID. By Edward Dunham, Ph.B., M.D. New York and Philadelphia: Lea Bros. & Company. 1898.

An author who at the present time has the temerity to present a new work on histology should certainly give some reason for so doing, especially as the field seems to be so well covered by the later editions of the several excellent manuals that have long been before the public. The writer thinks that the most important lesson to be derived from a study of the tissues in health and disease is a knowledge of the constant and potent activities of the cells to which those tissues owe both their origin and usefulness. "When the body develops under normal conditions, those cells build up the tissues, gradually modifying their formative activities so as to occasion a diversity of structure in the various parts of the body. During this developmental epoch, and after maturity is attained, the activities grouped as functional, and which it is the lot of the tissues to maintain, are also carried on by the cells.

"But in order that these manifold cellular activities shall be of the usual or 'normal' character, the conditions under which they are carried on must not depart greatly or for any considerable length of time from a certain usual but rather indefinite standard. If those conditions are materially altered, the cellular activities become modified, and the functions they perform suffer aberration, as a result of which structural changes in the cells and tissues may ensue.

"It is this close relation between cellular activity and structure which unifies the subjects usually kept distinct under the titles of normal and pathological histology, for it is evident that there is no natural separation between these subjects. In the preparation of this manual the author has steadfastly kept in view such a conception of the relations between cellular activity and structure. To carry out this purpose it did not appear necessary to describe the various changes wrought in the individual organs or tissues by unusual conditions. It seems to him that a general statement of the alterations in structure attributable to modified cellular activity would enable the student to interpret such departures from the normal as he might observe in particular specimens, provided he was familiar with the normal structures of the body."

Lest we do the author an injustice we have quoted thus fully from his preface that he may speak directly to our readers. We confess that we do not understand exactly what the author is aiming at, which may be due in part to our own deficient knowledge of the subject, or in part to the evidently obscure diction which is to be found in the author's preface, and which is distinctly absent from the admirable short introduction with which he introduces us to the study of the subject.

Part I includes the histology of normal tissues, and includes a description of the cell, the elementary tissues, and the structure of the various special organs. This part in the main is well done, so far as the text is concerned. The illustrations are much better than any which are found in any modern work on histology, and are for the most part original. Some of the half-tones are so well done as to rival lithographs in their perfection of detail. The newer

histology of the nervous system as brought out by the work of Golgi and Ramon y Cajal is quite fully presented.

Part II of the work, which includes nearly one-third of the entire volume, is devoted to the histology of the morbid processes. This is pathology pure and simple, and we do not see how the author has made good his statement of the necessary relation of these two subjects, by simply binding them in the same volume. Part II includes degenerations and infiltrations, atrophy, hypertrophy, metaplasia, structural changes due to and following injury, and tumors. This, like the first part, is beautifully illustrated and well written. The work closes with a brief description of histological technique, including the care of the microscope, methods of staining, cutting, mounting, etc.

There may be some advantage in teaching normal and pathological histology at the same time; if so, this work will serve some purpose, as it will be only necessary for the student to have one volume. If, however, there is such a close relation it would seem that the morbid anatomy might with advantage be included with the description of the normal structures.

A Manual of Modern Surgery. By John Chalmers Da Costa, M.D. Philadelphia: W. B. Saunders. 1898.

In the first edition of Da Costa's Manual he stated that its object was to stand between the cumbrous text-book and the incomplete but concentrated compend. In the preface to this second edition, which succeeds the other after four years, he congratulates himself that a considerable degree of success has attended this effort. In the new edition no attempt has been made to alter the general character of the work, although it has been practically rewritten, many new articles added, and a majority of the old articles enlarged, restricted, or otherwise altered.

The work opens with a chapter on bacteriology which is much too brief to be of service to the student, though perhaps it may have its value in connecting the subject with surgery. We think, however, it would have been better if this chapter and the following one on asepsis and antisepsis had been included in a general statement of the relation of infection to surgery and the means of avoiding surgical diseases due to infection.

Chapter III is devoted to inflammation; then follows one on repair, surgical fevers, and curiously enough the terminations of inflammation do not follow inflammation, but appear after surgical fever.

In the following order are considered ulceration and fistula, mortification and gangrene, thrombosis and embolism, septicemia and pyemia, erysipelas, tetanus, tuberculosis, and rickets. Next we have a lengthy chapter on contusions and wounds, which occupies a singular position, being placed between rickets and syphilis. We fail to see what purpose is served by this arrangement, or rather want of arrangement. Surgically considered, syphilis is closely related to tuberculosis.

On page 208 is a drawing showing the notched teeth which are supposed to be indicative of syphilis. This illustration has done duty for more than twenty years, and has, like the picture of Charcot's joint atrophy in tabes, been before us for so long that its appearance is like that of an old friend. One would think that in the fulness of time a new example of Hutchinson's teeth might be observed which would serve the purpose of illustration and at least furnish a change, even though it served no better purpose.

Chapter XVII is devoted to tumors or morbid growths. These are divided into neoplasms and cysts. This chapter we regard as one of the best in the book. It is clear, concise, and gives an excellent outline of modern views in this department of pathology.

An extensive chapter is that dealing with diseases and injuries of the heart and vessels. It is illustrated by three plates showing the major and more common ligations.

The most extended chapter, comprising nearly 200 pages, is that dealing with diseases and injuries of bones and joints. Eight and one-half pages are devoted to orthopedic surgery. The major portion of this very brief discussion is devoted to wryneck and clubfoot; singularly enough it has no mention of spondylitis. In the division of surgery of the spine, this condition is not adequately treated, though Treves' operation is mentioned. Diseases and injuries of nerves and those of the head are adequately considered.

The remainder of the work is taken up with diseases and injuries of other portions of the body, the largest part being devoted to those of the abdomen. The work closes with short chapters devoted to anesthesia, burns, lymphatics, bandages, and a somewhat extended discussion of genito-urinary surgery. A separate chapter is devoted to the diseases of the breast, and there is a brief account of the injuries caused by electricity, and of skiagraphy and its surgical uses.

The work is made up of forty separate divisions, which in this review we have termed chapters, but which in the book are simply designated by Roman numerals and by a heading in heavy type. The different sections are of unequal merit, some of them being excellent, while others are mediocre, if not positively bad. The lack of logical and consistent arrangement we think seriously mars the work. It is well issued by the publisher, although a few of the drawings could be improved.

HUMAN ANATOMY. A Complete Systematic Treatise by Various Authors. Edited by Henry Morris, M.A., M.D. Second Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Son & Co. 1898.

The second edition of this magnificent work comes to us revised, improved, and considerably augmented. The work is divided into eleven sections, as follows: Osteology, by J. Bland Sutton; Joints, by Henry Morris; Muscles, by J. N. C. Davies-Colley; Blood-vessels and Lymphatics, by William J. Walsham; Nervous System, by H. St. John Brooks; Eye, by Marcus Gunn; Tongue, Nose, Ear, Heart, Voice, and Respiratory Organs, by Arthur Hemsman; Organs of Digestion, by Frederick Treves; Genito-urinary Organs and Skin, by William Anderson; Surgical and Topographical Anatomy, by W. H. A. Jacobson; Vestigial and Abnormal Structures, by Arthur Robinson.

This splendid addition to medical literature is illustrated by 790 woodcuts, some two hundred of which are printed in colors. The illustrations for the most part have been engraved from drawings made by special artists, and are generally from original sources.

It is doubtful if this work will replace Gray's Anatomy, with which our student days were so familiar. The later editions of that classical work have been greatly improved. It would be invidious to make a comparison between these two works, where both are so well done. To those who possess a copy of the older edition of Gray, we would strongly recommend that they supplement

that with the work of Morris. Many of the sections in this latter work are classical. They are most of them so full and complete that the book will be exceedingly valuable to the specialist as practically containing all that is known of the anatomical structures which he studies.

A COMPEND OF OBSTETRICS. By Henry G. Landis, A.M., M.D. Revised and Edited by William H. Wells, M.D. Sixth Edition. Philadelphia: P. Blakiston's Son & Company. 1898.

The preface to this, the sixth, edition of Landis' Obstetrics informs us that the necessity for a sixth edition is sufficient evidence of the esteem in which the work is held by the student and practitioner. We have had occasion elsewhere to refer to quiz compends, sometimes in words which have been commendatory, and at others to condemn. Undoubtedly there are subjects in medicine which can be treated advantageously in this way and in which a volume of this kind may prove to be a help to the student in fixing an outline of the subject. We do not, however, regard obstetrics as one that can be greatly illuminated by literary waves so exceedingly short as many of those found in this volume.

To the question, What is puerperal eclampsia? the answer is, "A form of convulsions occurring before, during, or after labor which resembles epilepsy in clinical appearance and uremic convulsions in cause. The typical form occurs during the second stage of labor." Brevity is sometimes described as the soul of wit, but it certainly is not always the essence of science. If the effort to be brief requires that an author should describe eclampsia as resembling epilepsy, then such brevity had better be somewhat enlarged.

Naturally there is much that could be found in a book of this kind that is well said, but taking it on the whole we do not think that this volume is up to its class. It contains scarcely more information on the subject with which it deals than does the average dictionary.

ACROMEGALY. By Guy Hinsdale, A.M., M.D. Detroit: Wm. M. Warren. 1898.

This volume forms the Boylston prize essay of Harvard University for 1898. It appeared first as a serial in MEDICINE, and has now been reprinted and forms a most attractive monograph. It may sound like self-praise, as the original publication was in this journal, when we say that this is one of the handsomest monographs of the year. The illustrations are exceedingly well printed, and many of the half-tones appear almost as sharply as if done on steel. In the bibliography there is gathered together practically all that is known upon this subject. It includes 377 references. The essay is based upon an analysis of 130 cases, which have been studied as originally published. The table of contents includes the following: History and definition, symptomatology, course and duration, anatomy, pathology, etiology, theories as to acromegaly, gigantism, diagnosis, treatment, case of acromegaly, skeleton of the American giant, and bibliography. The volume forms the most complete study of acromegaly in the English language.

EDITORIAL COMMENT.

PORTRAITS OF PHYSICIANS AND THE PERIODICAL MEDICAL PRESS.

A pleasing custom, increasingly in vogue, is the printing of pictures of physicians with the articles which they write. The most usual arrangement shows a picture about one inch square of the author, in the upper left-hand corner, at the commencement of the article. Some of our contemporaries resemble, in consequence, an ancient folio, presenting the engraved or illuminated letter at the beginning of the chapter.

The printing of an author's picture with his article has many advantages, as it familiarizes the medical public with the face of the more frequent contributors to medical literature, and, if the author be at all prepossessing in appearance, it cannot be without a favorable effect upon the mind of the reader. Necessarily, it somewhat increases the cost of publication, as these half-tones, though small, will cost at least one dollar and fifty cents for each one. If a journal publishes a number of short articles, the pictures will add considerably to the cost of making up the pages; this, however, is somewhat lessened by the fact that these plates once in possession of the publication can be used again, not only in illustrating original articles, but could, we think, be employed to advantage in illustrating society reports, correspondence, book reviews, and obituary notices. Especially should we like to see these cuts used in editing the reports of medical societies, thus relieving that too often dreary waste of reading matter.

While we commend this custom, we think that editors should be especially careful as to the arrangement of these cuts; where they are small they should always be kept as near the top of the article as possible. In the case of large cuts it might be advisable to devote an entire page to their reproduction. Everywhere throughout the article the closest distinction in spacing should be preserved between such illustrations and those which show pathological specimens, normal and morbid histology, types of degeneracy, etc.

We have always felt gratified at the sight of one of our friends' pictures, and it has seemed to us in reading their articles that we had in a sense received a personal greeting. With articles contributed by those who are not personally known to us we have sometimes been disappointed; at first attracted by a pleasing countenance,

and a broad, intellectual looking forehead, we have had our expectations excited and have carefully perused an article so illustrated, finding to our regret that it consisted of a few platitudes. On the other hand, we have seen articles illustrated with anything but prepossessing faces, with retreating foreheads and irregular features, and have found the articles to be written with great vigor and to show a thorough mastery of all the details of the subject. We trust, however, that this slight incongruity will not delay the support of a custom which will probably in time become quite universal, which will make the faces of medical writers as familiar to the readers of the profession as is their literary style.

THE PROPOSED MEDICAL PRACTICE ACT IN ILLINOIS.

Illinois was one of the first States in the Union to legislate upon medical education. Necessarily, the first efforts in this direction were crude; they amounted to only a registration of diplomas and attempted to fix certain requirements to which colleges must conform, whose diplomas would be recognized by the Board of Health. This legislation has outlived its usefulness. The recognition of the diploma was the fatally defective provision in the old medical practice act which largely nullified its usefulness. We are credibly informed that a collection of individuals have secured no less than half a dozen charters for medical and other schools and are openly engaged in selling their diplomas in this country and abroad.

To such a pass has this evil advanced that a recent report of the North Central Association of Colleges and Preparatory Schools adopted strong recommendations and appointed a committee to protect educational degrees. They recommended that a commission be appointed in each State, which shall have power to regulate the incorporation of degree-conferring institutions. This committee recommends that the commission shall have power to prevent any incorporated or business enterprise, in which part of the assets and income are divided among the stockholders, granting degrees, or the incorporation of any college or university unless its productive endowments shall amount to at least $100,000. This report was signed by the President of the Northwestern University, the presidents of the Universities of Kansas, Missouri, Indiana, Nebraska, and Illinois, and the College of Iowa.

Not alone have the diploma mills tended to lower the standard of education in the profession, but, we regret to say, a number of

quasi-medical colleges have been formed, which graduate men incapable of meeting the entrance requirements of first-class medical institutions, and whose curriculum and facilities are far too limited.

In Chicago, at the present time, there are probably over five thousand students of pharmacy, medicine, and dentistry; of these, perhaps three thousand or thirty-five hundred are medical students, about one-half of whom are in colleges whose curriculum is commensurate with modern requirements. Indeed, the raising of the standard of the entrance requirements by the leading educational institutions has made possible the establishment of schools in which the standards are less exacting. The result has been that instead of a rise in medical education, there has actually been a decrease in the average attainments of the medical output of this city.

We feel that there is no possible remedy for this evil excepting a law separating the diploma from a license to practice. The latter alone should qualify. All first-class institutions of medical learning should earnestly unite in the support of the bill now pending before the Legislature of Illinois, in which it is proposed to place the licensing power in the hands of a State board of medical examiners. We can see no possible reason for objection to such a law on the part of any institution. If there be objection, it can come from no other reason than that such institution fears that its graduates may not be able to pass the required examination.

THE FALLACY OF MEDICAL STATISTICS.

Professor Kassowitz, in writing of the value of antitoxin in the treatment of diphtheria, points out that comparisons in the recovery rate between different periods of time are absolutely worthless as showing the value of antitoxin in this disorder. This he thinks is due to the prevalent bacteriological diagnosis, which includes in the later tables certain cases which would have been excluded in the older tables, cases which would have recovered without treatment and probably without diagnosis.

We think these criticisms of Professor Kassowitz are certainly just. The statistical method does not lend itself to studies of this kind. Time spent in the preparing of tables and in the analysis of figures, which at the best deal with variable factors, can never result in accurate conclusions; therefore we are in full accord with the Professor when he states that most of this statistical work has been absolutely valueless in determining the worth of antitoxin in the treatment of diphtheria.

From reading the Professor's communication, which was delivered before the Gesellschaft der Aerzte, in Vienna, it is evident that his effort was not so much to attack the value of statistical methods as it was to show that antitoxin was of little or no value in the treatment of diphtheria. The value of antitoxin in the treatment of diphtheria is not, to our mind, demonstrated by statistics at all, but is shown by the opinions of hundreds of practitioners who have treated thousands of cases and have come to the conclusion that the treatment is far superior to any that has ever been used. There are also the mortality statistics, which show its value. Taking one year with another, the number of deaths from diphtheria in a given community has remained fairly constant. As soon as the introduction of antitoxin was made, the number of deaths in Chicago fell to nearly one-third of what it was before this treatment was introduced. These figures, of course, leave out all question of diagnosis and all question of recoveries and deaths, based on the number of cases treated.

The accumulated experience of skilled practitioners and the absolute decrease in the sum total of mortality from this disease are sufficient to place this method of treatment high in the esteem of the profession. In our opinion, antitoxin treatment has come to stay.

CELEBRATED PATIENTS.

As a rule disease or injury cannot occur in a very celebrated patient who is for a long time under treatment without exciting more or less comment or criticism. Commonly the illustrious patient does not receive as efficient treatment as a less important personage. The interests at stake are so great that there is frequently a division of responsibility, and this often results in a want of decisive action, or else, for the same reason, a too conservative course is followed. Courage and self-confidence have saved many a poor patient's life that might have been lost if the outcome of the case had directly affected the professional reputation of the medical attendant.

The recent fracture of the patella of the Prince of Wales has brought forth a sharp criticism of Lord Lister by Dr. Lucas Championniere in the *Journal de Médecine et de Chirurgie Pratiques*. Championniere points out that Lister was the first to treat fracture of the patella by direct suture, and he cannot understand why the Prince was deprived of this admirable method, which would have been used on the least of his subjects. Championniere has treated fifty-

three cases of fracture of the patella in this way, and all of his cases have recovered a perfect use of their joints. He points out that the diminished physical activity due to the enforced confinement is attended by considerable risk, and heartily condemns the older method employed in the Prince's case.

THE MEDICAL CRISIS IN FRANCE.

Le Progrès Médical of November 5, 1898, publishes an article taken from *Lyon Médical* of September 25, 1898, on the decrease of medical men in France and what is described as the *crise médicale*. By the term is meant a decrease in medical incomes and an oversupply of medical men, so that it is practically impossible for many physicians to earn a livelihood. Appropriately, this editorial appears in the students' number and is from the pen of M. Noir. He says that a medical crisis exists without doubt, notwithstanding that the number of medical men in proportion to the population is less than it was in 1854. The number of patients has diminished correspondingly with a decrease in mortality, as shown by statistics. The rarity of important epidemics and the nearly total disappearance from the large cities of such diseases as typhoid fever, etc., are some of the causes. He finds that the number of patients has decreased, and those who pay their physicians have also decreased together with the amount contributed. These conditions are attributed to medical clubs, insurance companies who furnish their own medical assistants, free clinics, hospitals, and the organization of a public medical assistance in all parts of the Republic. He refers to certain departments of France in which there is but one physician to five thousand, and in one, Haute Loire, the proportion is one to six thousand inhabitants. The penury is so great in these regions that they are unable to secure the services of a medical man, and it is impossible for him to live unless he already has an income.

The statements of M. Noir are amply confirmed by a brief study of the statistics for epidemic diseases of Paris within a few years. The mortality in diphtheria, which was 2260 in 1881, had fallen to 388 in 1896; deaths from typhoid fever in the same period had fallen from 2283 to 247; from scarlet fever, from 438 to 157; from smallpox, from 997 to 21. Of necessity this decreased mortality means decreased morbidity, and of course a lessening of the demand for medical services.

We may well ask ourselves if the same conditions are not increasingly prevalent in this country. While the symptoms may

not be as acute with us, we are certainly well on the road to a *crise médicale*. Perhaps public sanitation has not received the same attention in our country that it has in France, but in the main there is a marked diminution in the demand for medical services. The medical club has not developed with us to the same extent, but the hospitals and dispensaries have made up for any lack in this respect. While the number of medical men has absolutely decreased in France, they have undoubtedly increased in this country.

Notwithstanding the unfortunate business outlook of the profession, the colleges go on expanding and the number of medical students increases. Perhaps, however, these things will regulate themselves. One cannot quarrel with a business system that sells a medical education when there is a demand for it, but it looks as if the near future held very few dividends for capital invested in a medical education.

AMENTIA AND DEMENTIA.

Amentia was used by the Vienna School to distinguish the suppression of the mental faculties, while dementia designates their destruction. The former includes cases of stuporous melancholia and all apathetic states in which the mind does not act. The patient takes little or no interest in his surroundings, often does not speak, or if he does, it is in such an aimless way and with so little attention that but little investigation of the mental state can be made. These cases are often careless in dress; their food, if taken voluntarily, may be consumed without order and apparently with little appreciation of taste. They sometimes soil themselves, and their time is passed in a listless and apathetic way.

The above picture, briefly outlined, will be recognized as a terminal state of many psychoses; it is perhaps more frequent after melancholia, less so after mania, not uncommon after confusional states, but it may be found in the history of almost any mental disorder.

Most of the cases presenting these symptoms are classed as dements and an unfavorable prognosis given. In institutions for the insane these cases are too often relegated to back wards and so receive but little attention from the medical staff. Perhaps this is natural, as they are classed under dementia, and dementia is regarded as a hopeless and incurable condition. We would, however, make a plea for the retention of the word "amentia" in the classification of mental disorders. It includes a class of cases in which many of the signs of dementia are present, but in whom, in

fact, there is no loss of the mental powers, they being merely suppressed. The distinction between amentia and dementia is, that in the former the mental activities are simply in abeyance, while in the latter they are lost or destroyed.

Asylum records show cases in which insanity has existed for years, which have been classed as dements, who made fairly good recoveries, who had been regarded as hopeless. This error we believe to be not uncommon, and it arises from not bearing in mind clearly the distinction in the use of the two words, amentia and dementia.

We would like, if we were able, to point out clearly the distinction between the two conditions. Unfortunately, in many cases a differential diagnosis cannot be made, as the symptoms of one are identical with the other. In many cases, by close observation a fairly accurate distinction can be made. It is evidently the duty of those who have the care and treatment of the insane to make a close study of such cases. Those suffering from amentia are in a condition in which treatment is of great value in restoring unbalanced mental functions. To relegate them to the limbo of incurables is a very grave injustice.

ALLEGED CURES OF PARALYSIS AGITANS.

Now and again the periodical medical press contains an account of the cure of this most intractable disorder. If there is any affection of the nervous system in which the prognosis, so far as cure is concerned, is absolutely hopeless, it is Parkinson's disease. So far as we are acquainted with the literature, no one has ever reported more than a single case that has been relieved. Study of these cases will throw doubt on the diagnosis in almost every case. Among the latest is one by Nathan Hermann in the *Maryland Medical Journal* of December 17, 1898. The case was that of a young boy, who had fallen from a street-car, and had been taken to a hospital, from which he had been discharged, as presenting no obvious signs of injury. The first symptom was a tremor which came on soon after the accident, and grew worse for three or four months, until he had to give up his occupation. The report states that he was later exhibited at the Clinical Society of Maryland, and that at that time he was pale, emaciated, and extremely nervous, and his right leg was in such violent agitation that he could not use it in walking. Nearly four years after the onset of the trouble hypnotic treatment was begun and resulted in a complete cure in a few weeks.

The author uses this case as a text to illustrate the value of hypnotic suggestion in the treatment of certain nervous disorders. From this conclusion we do not differ, but we do take issue with him that the case presents any element that would entitle it to be classed as one of Parkinson's disease. As described, the tremor is essentially of the intention variety, and while this is sometimes present in paralysis agitans, it is certainly infrequent. There is no mention of the characteristic rigidity of muscles, mask-like features, or propulsive movements, which to our mind are the distinguishing features of this disorder.

In the discussion of the paper before the Medical and Chirurgical Faculty of Maryland, Edward N. Brush stated that he did not think the case was one of paralysis agitans, but regarded it as one of traumatic hysteria. The author reaffirmed his opinion that it was an example of Parkinson's disease, and reenforced his opinion by the statement that the best writers were not agreed as to the kind of tremor found in this disorder. He based his diagnosis upon the presence of tremor, which in some types of this disease is known to be entirely absent.

We have analyzed this case, as it furnishes a convenient text for illustrating the essential symptoms of this disorder, and to sustain Parkinson's disease in its bad preeminence as the most incurable of all nervous affections.

KIDNEY OPERATIONS.

The increasing frequency of kidney operations has made it necessary to determine with some accuracy the functional activity of each kidney. It was perhaps natural that surgeons should feel some chagrin if, after the removal of a diseased organ by a successful nephrotomy, they found on the post-mortem table that the patient had but one kidney. The brilliant work of Professor Kelly, of Johns Hopkins Hospital, made it possible to obtain by catheterization of the ureters the urine from each kidney. In this way a fair estimate could be made of the structural integrity of each of the organs. The method of direct catheterization, even in the female, is very difficult, and in the male almost impossible, excepting in the hands of so exceptional a master of technique as Professor Kelly.

The instrument devised by Professor Harris (MEDICINE, April, 1898) overcomes all these difficulties. With it the posterior wall of the bladder is elevated so that this viscus is divided into two separate cavities by a central diaphragm. Into each cavity a ureter empties.

With the Harris instrument it is possible to secure the discharge from both ureters, with certainty and without difficulty.

Even with this new appliance a very rare case may occur in which both kidneys are upon one side of the body and are connected with the bladder by two ureters opening in the usual way. It is easy to conceive how abnormally situated and fused kidneys, such as are described in this issue of MEDICINE, might lead to the removal of both organs in doing ordinary nephrectomy.

There is another use to which attention has not heretofore been directed, and to which the Harris instrument may be put, namely, the study of the non-surgical affections of the kidney. We know that many pathological processes differ in degree in the two organs. It is possible that those prolonged cases of Bright's disease in which casts and albumen are present in the urine for years may be due to the fact that the abnormal urinary constituents are excreted by one kidney, which is alone affected. While Professor Harris's instrument was devised primarily for the study of the surgical affections of the kidney, we can see that it may have an important range of usefulness in the study of all renal disorders.

THE PEST IN INDIA.

Bonnifin in the *Journal de Médecine de Paris* of December 4, 1898, refers to the alarming fact that the pest had, up to last June, destroyed 100,000 people out of the population of 1,600,000 in the single city of Hong Kong, and that the cases were on the increase. He speaks of the successful treatment by Yersin's serum, which is claimed to have cured twenty-six out of twenty-eight cases. Unfortunately, the Chinese have proven very refractory to treatment by Europeans. A greater success has attended the use of the serum in India, as there is less resistance on the part of the inhabitants. In December the pest had appeared in Turkestan Russia; it was reported from Madagascar, and brought down a few victims in Vienna. The editorial closes with the significant words, "*caveant consulis.*"

SALICYLATE OF SODIUM IN EYE-STRAIN AND PTOSIS.

In an article in the *Maryland Medical Journal* of November 19, 1898, on the value of salicylate of sodium, Edward Anderson describes the case of a young lady suffering from eye-strain and ptosis. She was obliged to use her eyes all day and a part of the night. Each day her eyes became more painful and sight more

imperfect. He advised her to consult an ophthalmologist, which she did. Within three years she had consulted three specialists in as many large cities, who one and all prescribed expensive glasses, which she thought for a time benefited her, but her sight grew worse and worse. Knowing she had suffered from rheumatism, Anderson gave her fifteen grains of salicylate of sodium three times daily for three weeks, after which time she was able to use her eyes all day without pain.

This case raises an exceedingly interesting point. In how many similar cases is internal treatment neglected? No one can doubt for a moment the close relation between eye-strain and headache. The error made by many ophthalmologists is to assume that because about 80 per cent of headaches are due to eye-strain that the remaining twenty are. This is only one-fifth as bad as the general practitioner who disregards eye-strain as a factor in headache. The one makes four errors in five, the other one error in five. Both are equally unscientific.

SELLING PATIENTS.

In our January issue we referred to this subject and gave our views. Since that time the *Philadelphia Polyclinic* has discussed the topic under the heading, "Shall the Consultant Pay the General Practitioner for Cases Referred to Him?" The latter portion of this editorial puts the matter so forcibly that we reproduce it here. Not that we think that the matter needs extended discussion, as most ethical questions so readily fall into two classes, the right and the wrong, and extended comments need not be made. Still, as a number of medical journals have commented extensively upon this practice and some have ventured to commend it, we quote the words of the *Polyclinic*, feeling sure that the argument there set forth is sufficient to condemn the practice on the grounds of expediency alone:

"While the specialist may think it would pay to give a good percentage for patients, and so keep busy, gain experience, and come to be known as a rising specialist, instead of spending years of waiting in hard study of literature and the minute investigation of his few cases; while it may appear probable that the occasional reluctance of the general practitioner to give his patient the chance of benefit by the specialist's 'superior knowledge and skill' would pass away under the influence of the proper percentage; while one might hope that the general practitioner with a direct pecuniary

interest would be able to discover more cases of cataract, appendicitis, or retroversion requiring operation, and even succeed in steering his neighbors to his own pecuniary advantage; it must not be overlooked that the general practitioner who enters upon such a course may become too grasping—may prefer a larger fee to a smaller one, and thus become the canvasser to an embryo specialist or recent graduate who can afford to pay most for the opportunity to gain experience and advertise himself to the community. Then what will one's reputation be worth when the truth leaks out that it is built upon recommendations for revenue only?

"But when it comes to considering the scheme from the standpoint of the patient there ceases to be anything to consider, for no such plan can be put in operation with the consent of the patient. He will not knowingly pay indirectly through the specialist a fee that he would refuse to pay directly to his family physician, and if he knew that he was advised to go to a specialist who would divide the fee with his adviser, such advice would not be worth giving. Only when all the parties directly concerned understand its nature, and agree to it, is a business transaction legitimate or honest. What is taken by stealth is stolen. If you claim that it is not theft to take what properly belongs to you, the reply is, that taking it by stealth always raises the presumption that it does not belong to you.

"The payment and acceptance of a fee from a specialist without the knowledge of the patient belongs exactly in the same category as collusion with the apothecary for a percentage on prescriptions. Only when the thing is done with the full knowledge of the patient can the referring physician rise from the level of a bunco-steerer to that of the paid agent or respectable drummer of the specialist. If any physician wishes to serve his patients as a professional adviser he must preserve his patient's respect and his own self-respect by openly demanding a proper recompense for his services and properly enforcing that demand. He must not seek to obtain secretly and through the aid of another what he is afraid or ashamed to ask openly. That would be a poor way indeed to dignify his calling and teach a proper respect for his services."

ABSTRACTS.

MEDICINE.

On the Bactericidal Functions of the Liver and the Etiology of Progressive Hepatic Cirrhosis.—

J. C. Adami, in the *Montreal Medical Journal* for December, 1898, gives an account of further researches on the bacterial origin of hepatic cirrhosis. In his first paper, read at the last meeting of the British Medical Association, he pointed out the resemblance between hepatic cirrhosis and an enzootic known as the Pictou cattle disease, the most characteristic lesion of which is an extensive cirrhosis of the liver. In these cases there was found a characteristic polymorphous bacillus, which in the earlier stages of its growth outside the body resembles a diplococcus. In the later stages it

FIG. 1.—Microbe of Pictou cattle disease from 24-hour-old agar culture. Stained carbol fuchsin. Reichert one-eighteenth immersion. Zeiss camera lucida.

becomes bacillary, and when seen in the tissues was present as a diplococcus surrounded by a faint halo. These forms are especially abundant in the liver and glands, and a large proportion of them do not take the stain. These non-staining forms are to be recognized as well-defined shadows having a characteristic brownish color. In the liver the microbes are present, stained and unstained within the liver cells, and to a less extent in the newly formed connective tissue.

The germ is pathogenic for rabbits, guinea-pigs, and mice; in these animals death occurs before cirrhosis has had time to develop, and the microbes are abundant within the liver cells.

The author examined sections from a series of twenty cirrhotic livers in man and found constantly an almost identical form, in

the main within the liver cells. These show as minute diplococcus-like bodies surrounded by a faint halo; they are small, and best studied under a high-power, although they can be made out with some difficulty under a one-twelfth immersion (*vide* Fig. 2). The method of staining was by carbolized fuchsin followed by bleaching in the bright sunlight for several days.

As an appendix to his first paper Adami describes a case of cirrhosis, from the liver and other organs of which a polymorphous bacillus was found, occurring in early cultures as a diplococcus, and

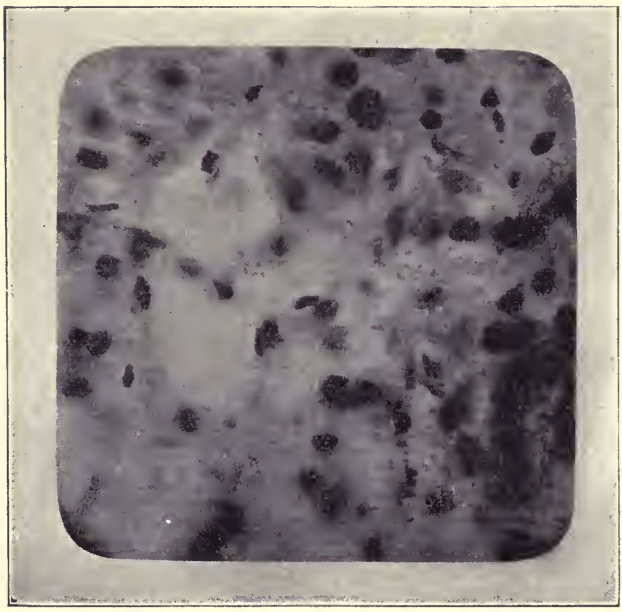


FIG. 2.—Pictou cattle disease. Section of liver of cow killed in course of the disease. Stained with carbol fuchsin 24 hours; bleached in the sunlight for six weeks after mounting. Photographed under Reichert one-eighteenth immersion. A few of the diplococcus forms surrounded by a faint halo can be well seen; these appear to be largely within the liver cells. With a magnifying glass the position of several other germs not perfectly in focus can be made out.

later assuming a bacillary or diplobacillary form. He pointed out that while in certain respects it resembled the colon bacillus, he regarded it as a distinct species.

Further studies of this germ isolated from this case of human cirrhosis, and of cultures from a second case, have conclusively proved it to be a variety of the colon bacillus. Its behavior, which at first seemed different from the colon bacillus, has by cultivation and passage through rabbits shown a striking resemblance to that

organism. These facts, with other considerations to be mentioned later, lead to the conclusion that the microorganism in question must be regarded as one of the very numerous varieties of the colon bacillus. It is possible that under the term "colon bacillus" are included numerous forms which the imperfections of our methods prevent us from properly distinguishing. Balancing all the facts of the case, the author cannot give adequate grounds for separating this form from the main group. Cultures of the colon bacillus, isolated from the liver of cases of cirrhosis within a few hours after

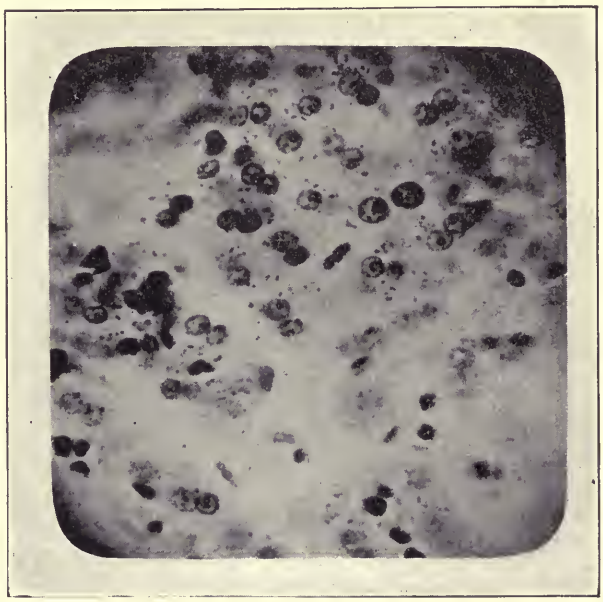


FIG. 3.—Pictou cattle disease. Section of liver of rabbit inoculated intraperitoneally with pure culture of microbe, and dying 21 days later. Treated like preceding and photographed under the same magnification. Innumerable diplococcus forms in the main *within* the liver cells; some, not perfectly in focus, seen as ovoid bodies, others as dots (end on?). The varying size is apparently due to different degrees of bleaching (in part).

death, are markedly attenuated or modified, only gaining typical characters after repeated subculture outside the body.

Making a parallel series of inoculations into rabbits with the cirrhosis form and the stock laboratory culture of the colon bacillus, the results tallied closely. If 0.5 cubic centimeter of a forty-eight-hour broth culture, of either form, be inoculated into the marginal vein of a rabbit's ear, within twenty-four hours the liver cells are crowded with forms which are in the main diplococci. Occasional

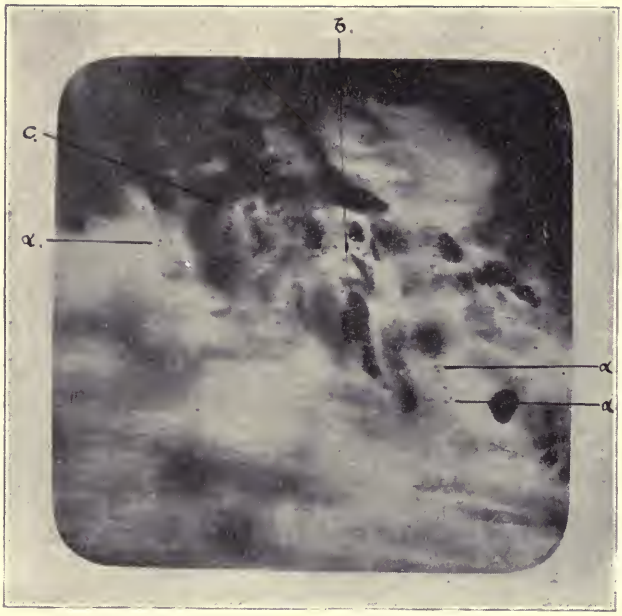


FIG. 4.—Progressive cirrhosis in man. Section of liver from case of more diffuse cirrhosis than the preceding; treated similarly to preceding. *a a*, Diplococcus forms within degenerating liver cells; *b b*, the same in the immediate neighborhood of what appear to be fusiform connective tissue nuclei; *c*, group of diplococcus forms in liver cell.

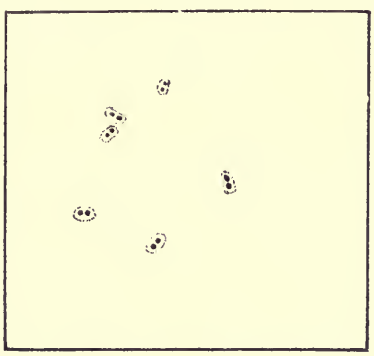


FIG. 5.—Microbe isolated from case of progressive cirrhosis in man. Broth cultures from pipette of heart blood 24 hours old. Stained carbol fuchsin; one-eighteenth immersion and camera lucida. Growth feeble and specimen overdecolorized, so that diplococcus forms appear smaller than normal.

streaks of three or four dots can be made out; but while the germs in the forty-eight-hour growth prior to inoculation were present in the main as stumpy bacilli and diplobacilli, those found in the liver presented a diplococcus form.

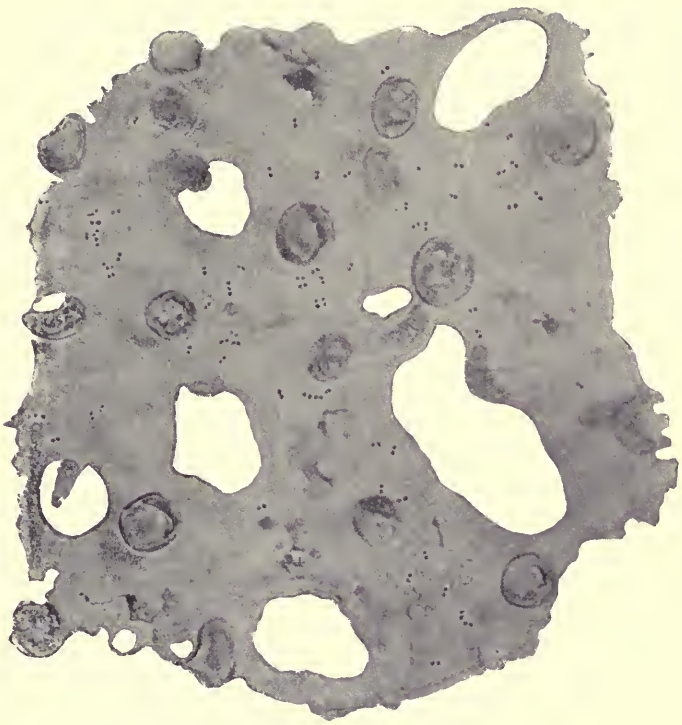


FIG. 6.—From section of liver, stained by carbol thionin, of rabbit dying 16 hours after intravenous inoculation of 0.5 cubic centimeter of a 48-hour broth culture of bacillus gained from spleen of a case of progressive portal cirrhosis. Drawing made by Zeiss's camera lucida, one-twelfth inch immersion lens (Winkel), Oc. 4. Sections from liver of rabbit inoculated intravenously with like dose of B. coli showed identical appearance.

As to how these bacilli pass into the liver cells he points out that (1) it is an observation frequently repeated, that the endothelium of the hepatic capillaries possesses pronounced phagocytic properties; (2) that Chiari has recorded similar results following the intravenous inoculation of a closely allied form, the typhoid bacillus; and (3) that the remarkable appearances presented can be easily reproduced by cautious staining with carbol thionin.

The colon bacilli injected into the blood-stream find their way into the liver cells and are present in greater numbers than in the spleen, kidneys, or other organs. At the end of sixteen to twenty-four hours the livers of inoculated rabbits are crowded with bacteria. Streak cultures made from the various organs give abundant colonies from the spleen, the heart blood, and to a less extent from the kidney; while a considerable amount of liver juice provides rela-

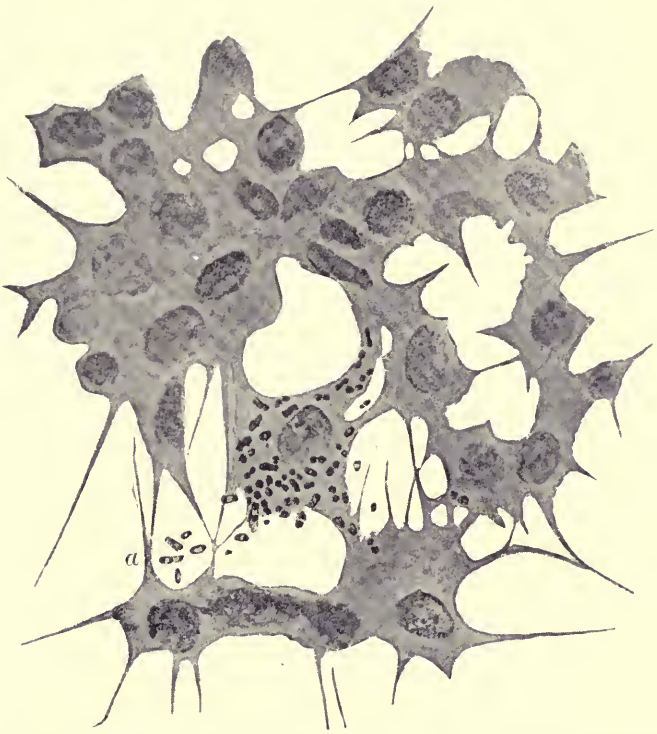


FIG. 7.—From section of mesenteric gland from case of portal cirrhosis. Stained carbol thionin, drawn under camera lucida. One-eigtheenth immersion lens (Reichert), Oc. 4. The section shows portion of a lymph sinus with colon bacilli which have apparently undergone proliferation post mortem in one of the large lymph cells. At *a* either the staining is partial or the bacilli already show signs of degeneration.

tively few colonies. So far, in these early cases, the bile has been found to be sterile. It is clear that the liver cells do not act as excretory agents for the bacilli, but have pronounced bactericidal functions. Save for Chiari's observations upon a similar destruction of the typhoid bacilli, this remarkable and important function of the liver cells has so far escaped general recognition.

The bacilli or diplococci seen in the liver within twenty-four hours after inoculation are in the main, if not dead, at least incapable of proliferating outside the body. That they are in the process of degeneration is shown by their form and that they easily give up their stain, and by the fact that when decolorized they have a peculiar brown tinge.

This change in form accounts for the numerous diplococcus forms found post-mortem in appendicitis and other diseases. The author has been able to produce like appearances in cultivations of

FIG. 8.—Another portion of the same section, drawn under the same magnification. Here in a lymph sinus some of the cells show in their protoplasm small clear spaces containing two, or more rarely three or four, fine deep-brown spherules—shadows of colon bacilli. At *a* is shown the shadow (unstained) of some other form. At *b* is a large cell filled with fine pigment particles unsurrounded by halos. Elsewhere in the section were large accumulations of amorphous brown pigment.

the bacillus outside of the body when grown at an unfavorable temperature. These forms he terms inferior bodies or undeveloped colon bacilli. He will not undertake to define their nature.

Similar appearances have been found in forty cases in which there was no demonstrable cirrhosis of the liver. From this he assumes: (1) that the colon bacilli in small numbers are, in the healthy individual, constantly finding their way into the finer branches of the portal circulation; (2) that one of the functions of the liver is to arrest the further passage of these bacilli into the general circulation and to destroy them through the agency of the specific cells of the organ.

Adami has not as yet been able to make a parallel series of examinations of the mesenteric glands. In cases of hobnailed liver the appearance of sections of these glands when properly stained by carbol fuchsin or carbol thionin is remarkable.

These observations appear to controvert the view that there is any necessary connection between the presence of more or less modified colon bacilli, or varieties of the same, in the liver, and the development of ordinary progressive cirrhosis. Such forms are constantly to be found in the liver, and it seems that the bacillus does not induce excessive connective tissue formation, otherwise every living being would suffer from cirrhosis. In the absence of cirrhosis the forms are almost all corpses, and even long action of strong carbolized fuchsin will not stain them. In cirrhosis, on the other hand, while there are many of these non-staining forms, areas can be found in which the diplococcus-like bodies stain deeply. Either they have only recently entered the organ and are just killed, or they are still alive, though in a form so attenuated that it is only with difficulty that cultures can be made. The author considers that the very great number of these forms found in well-marked advancing cases of cirrhosis shows a direct relation of this change to the infection. In advancing cases of cirrhosis the mesenteric glands are crowded with a diplococcus form of the bacillus, just as found in Pictou cattle disease.

In favor of this contention, that there is a relationship between the presence of these diplococcus forms and the development of ordinary cirrhosis, the following considerations seem to be of weight:

1. The very great number of these forms found in the liver in well-marked progressive cases of ordinary hepatic cirrhosis.

2. The coincident great number recognizable in the mesenteric lymphatic glands, there being in this a close parallelism to what is seen in the Pictou cattle disease.

3. The parallelism in general between the bacteriology of these cases and that of Pictou cattle disease.

The author's investigations upon the microorganism of Pictou cattle disease show that while closely allied in form and characters to the colon bacillus, it is, and remains, a distinct species. Repeated subculture during the last three years has not brought it nearer to type. The agar colonies of the bacillus are much smaller than those of the ordinary colon bacillus. It does not ferment lactose or glucose, and does not yield the indol reaction, while upon acid potato the superficial growth is so slight as to be almost invisible. It is fatal to mice, an animal not killed by the colon bacillus. The constant discovery of this form in animals afflicted with the Pictou cattle disease renders it a most reasonable supposition that there is a direct relationship between its presence and the development of the disease.

Had further work upon human cirrhosis confirmed Adami's first impression that the form isolated possessed individual features, and had further study revealed the repeated presence of such specific microbe in cases of the disease, it would also have been reasonable to assume cirrhosis to be due to the action of such a germ. But further study has shown that while one germ is to be detected in the livers of advancing cases of cirrhosis, that germ is evidently the colon bacillus, more or less attenuated, it is true, but still a common form and one which is habitually to be detected in livers presenting

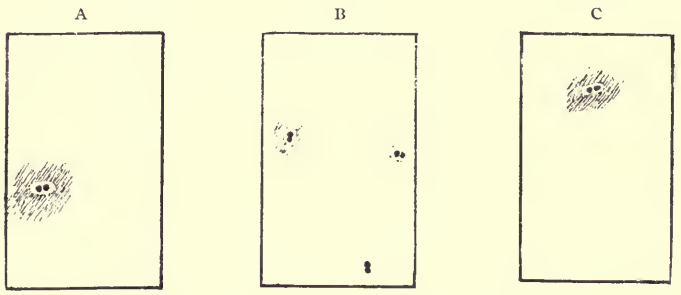


FIG. 9.—From slide preparations from agar (glycerinated) cultures made direct from pipettes taken at autopsy 52.98 on case of atrophic cirrhosis. Drawn with Zeiss's camera lucida. Reichert one-eighteenth immersion. Stained carbol fuchsin. A, From kidney juice pipettes, 24 hours' growth; B, from mesenteric gland pipettes, 24 hours' growth; C, from ascitic fluid, 24 hours' growth.

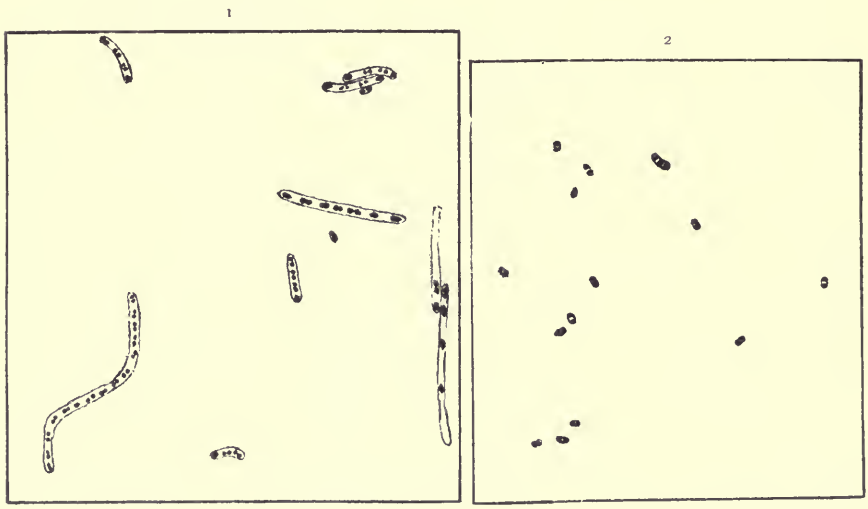


FIG. 10.—Microbe isolated from case of progressive cirrhosis in man; to show extreme polymorphism. 1, From agar plate colony, plate made from isolated colony on glycerinated agar inoculated from spleen juice. Agar plate five days old. Shows long filaments composed of series of diplococci embedded in sheaths. 2, From broth cultures eight hours old, inoculated from colony on agar plate supplying the filamentous form.

not a sign of cirrhotic change. If, therefore, there is any relationship between the presence of such a form and the development of the disease, clearly some other factor or factors must be at work. But beyond the point that there is this remarkable abundance of modified colon bacilli in the liver and in the mesenteric glands in cases of ordinary cirrhosis, he cannot go.

Family Periodic Paralysis.—

In the *Journal of Nervous and Mental Disease* for September and October, 1898, E. Wyllys Taylor records two new cases of this peculiar malady and presents a very careful study of the subject, with complete literature. His cases are the first typical ones observed in this country, and his paper is the best exposition of the disease yet written. The affection is characterized, in its typical form, by extensive flaccid motor paralysis, associated with loss of reflex and electrical excitability, without sensory or psychic disturbance of any sort, and with intervals of perfect health. The disturbance is periodic, and the predisposition to its development is clearly hereditary.

In the family studied by the author there occurred eleven cases among twenty-two individuals in five generations, and the hereditary tendency was transmitted through the female as well as through the male line. Apart from this affection there seemed to be no neurotic tendency in the family. So far as could be ascertained the trouble always appeared at the age of puberty (except that in one patient it began in the eighteenth year), and persisted with varying severity through the active years of life, to gradually disappear between the fortieth and fiftieth years.

In the first case reported, a schoolboy of 19, the attacks began at 15 and continued at a rate, on an average, of one a week. A typical attack, in detail, is as follows: After a day usually of somewhat violent exercise, as for example bicycle riding, he goes to bed feeling perfectly well and strong. There are no prodromal symptoms whatever beyond, on occasions, a certain feeling of weakness, which usually is not observed, since the attack begins almost invariably at night. The portion of the body first affected, whether legs or arms, is also not definitely known for the same reason, though he thinks a weakness of the legs is antecedent. On awaking in the morning he finds himself in a pronounced attack, completely paralyzed, with the general exception of the cranial nerves. Voluntary movement is absolutely abolished. Coughing and sneezing are impossible, but respiration so far as he has observed remains nor-

mal. There is no dyspnea. The muscular system is perfectly flaccid. He has no desire for food or drink during the attack, and he often goes twenty-four hours or more without urination. There is sometimes apparent temporary urinary retention, which he thinks is due rather to the awkward position in which he happens to be lying than to any actual disturbance of the sphincters. He never defecates during an attack. He has no sensory disturbance whatever, and his mind is perfectly clear throughout. After lying in this helpless condition for hours, he gradually recovers the lost motor power, and toward evening of the same day is able to get up, the power usually returning first in the arms, after which a complete return to the normal takes place. Speech is always unaffected; there is no difficulty in swallowing, and never the slightest pain.

From this time until the onset of the next attack the patient regards himself, and his friends regard him, as a normal individual, capable of the same muscular exertion as his companions. He always noticed that any overexertion tends to bring on an attack, which must, however, be preceded by a period of rest. In this way he has come to predict, with relative certainty, the occurrence of a "lameness," as he calls it. He usually pays the penalty for a particularly enjoyable day of activity by an enforced rest of many hours the following day, the onset of the paralysis coming some time during the night. He is able to abort a threatened attack temporarily during the day by increased muscular exertion, but it is merely a postponement of the inevitable paralysis, which follows with all the more certainty later. He is not able to attribute the attacks to dietary errors, or to anything whatever beyond the mere fact of exertion.

The result of physical examination between the attacks was entirely negative. Seen as an attack was passing off, the knee-jerks were found to be absent, and electrical reaction to faradic stimulation, direct and indirect, enormously diminished.

The sister of the foregoing patient, a married woman of 24 years, had begun to have the paralytic attacks at the age of 12. They recurred at intervals of from one week to a month and varied in intensity, the respiratory muscles and the face being involved in the more severe attacks. As in the brother's case, examination between the attacks showed a perfectly normal individual.

Syphilis and Tabes.—

Ernst Kuhn (*Arch. f. Psych. und Nerv.*, 1898) says that the statistical statements of Fournier and Erb regarding the frequency of

syphilis in the antecedents of tabes have given rise to much controversy. Among other criticisms it has been contested that the statistical method is most unreliable and that the results may be interpreted in accordance with whatever theory the investigator may be supporting. Granting the weakness of statistical evidence, it is to be remembered that it constitutes the only available testimony on the etiologic relation of syphilis to locomotor ataxia. We are not in a position to show by anatomico-pathological methods that syphilis causes tabes, and the latter disease ordinarily follows the former after such a considerable lapse of time and is, moreover, so different from it that clinical evidence is entirely worthless.

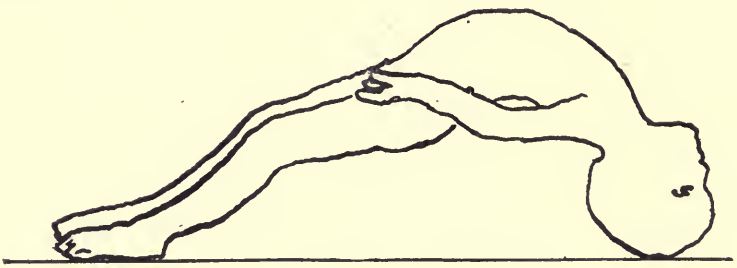
The author's statistics are based on a study of 214 cases of tabes (136 men and 78 women) from the neurological service of the Charité, in Berlin, in comparison with 600 non-tabetic patients (400 men and 200 women) from the same service. The latter class belonged to the years 1894, 1895, and 1896, while the tabetics covered the period from 1880 to 1896 inclusive. This disproportion in the time of observation has some effect upon the result, tending to raise the proportion of syphilitics in the non-tabetics, for of late years a history of syphilis has been much more carefully sought than was formerly the case.

The results of the inquiry, which are interesting and apparently conclusive, are in brief as follows: Of the tabetic men 38.2 per cent gave a conclusive history of syphilis, while of the men with other nervous affections only 7.75 per cent gave a like history. By conclusive evidence of syphilitic infection is meant a definite history of a primary sore with following secondaries or antispecific treatment in the venereal wards of the Charité. The non-tabetic men gave a history of chancre with symptoms following which were suspicious of syphilis in 1.5 per cent, while the tabetics gave such a history in 8.1 per cent. Of the male patients with tabes, 21.3 per cent, while denying the primary lesion, had suffered from such symptoms as would tend to a diagnosis of syphilis; of the patients with other nervous diseases only 4.5 per cent had had such symptoms. Finally, in only 11 per cent of the male cases of locomotor ataxia was there no evidence whatever of venereal infection, while 67.5 per cent of the non-tabetics gave this negative history. The results with the women were practically the same. Of the tabes cases, 35.9 per cent were surely syphilitics, 35.9 per cent were suspicious, and 28.2 per cent gave no evidence whatever of previous venereal disease. For the non-tabetic women the percentage in these three classes was 6.5, 10.5, and 80 per cent respectively.

It will be at once apparent that the paper adduces indisputable proof of the important rôle played by syphilis in the etiology of tabes. With an unmistakable history of syphilis more than five times as frequent in tabetics, and no venereal history whatever nearly four times as frequent in the non-tabetics, only one conclusion is admissible.

A Case of Pseudotetanus.—

Under this title T. Escherich describes a case in the *Wiener Klinische Rundschau* of December 4, 1898. The patient was a girl five years old, who had been previously well excepting an attack of typhoid fever the year before. On July 10, 1898, the mother noticed that the child held its head stiffly, and on the following day the cramp had extended to the back and legs. There was vomiting of brownish masses. On the third day the child could not open its mouth.



On admission to the hospital the same day there were the characteristic appearances associated with traumatic tetanus. The muscles were contracted, the teeth pressed together, and the feet were in an equinus position. These tonic contractions were of variable duration. During the severe spasms the back was entirely raised from the bed, presenting the typical *arc-en-cercle* of hysteria. This attack lasted from a few minutes to an hour. The muscles of respiration were more or less involved; breathing was irregular and stertorous. The child was cyanotic. The disease presented its greatest severity from the 14th to the 24th of July; during this time nourishment was kept up by a tube. On the 24th of July, two weeks from the commencement of the disorder, the contractures became less marked and the little patient began to be fed with a spoon. On August 1 the muscles had again become flaccid, with the exception of those extending the foot. August 20 the patient could stand alone, and four days later she was discharged recovered. During the entire illness there was no fever nor any disturbance of

the vegetative functions, and the mind remained clear. The facial phenomenon and Trousseau's sign were not obtained. The galvanic tonus was not increased. Mechanical reaction of the muscles was greatly exaggerated, the superficial and deep reflexes increased. No pain was complained of excepting in the neck, and only during the severest spasms.

The author thinks that the case should be classed under pseudo-tetanus, for a description of which he refers to his work, "Tetany, Traite des Maladies de l'Enfance," tome iv. In this disease he says the cramps are found in the legs and back muscles, while the arms remain relatively free. Trousseau's sign is absent, and the mechanical reactions as well as the tendon-jerks are increased, in these respects differing from ordinary cases of tetany. In the case which he describes the extent of the cramps and the involvement of the muscles of the jaw give it a close resemblance to ordinary traumatic tetanus.

Massage in the Treatment of Glaucoma.—

J. A. Pratt, in the *Philadelphia Medical Journal* of December 17, 1898, calls attention to the value of massage in this intractable affection. He reports the case of a colored man who had become blind in one eye, while in the other the sight was becoming poor. He had been treated, but with no benefit. Examination disclosed a typical case of glaucoma. The left eye was blind and stony hard. In the right the tension was about +1 with vision of 20–40, and at times slight neuralgic pains. The right eye had been ailing about two months.

The iris was thoroughly contracted with eserin; a four-per-cent solution of cocaine was instilled, and then with the back of a hard-rubber cataract-scoop the corneoscleral junction was gently masséed with a firm, even stroke, from ten to twenty strokes being made over each place. It is best not to do too much at the first sitting, but to be governed by the behavior of the eye. After instilling and prescribing a few drops of a one-per-cent solution of eserin he was told to return on the third day. The treatment was now repeated, and again upon the second day. At the end of the third treatment the tension was normal, vision was normal, and all discomfort gone. He was told to return in three days, but he remained away ten days. During this time the eserin was continued and hot applications were made, but on the patient's return all the old symptoms were present. This experience demonstrated that the benefit received was due not to the drug but the massage. The treatments were resumed with the

same benefit. At present sight is normal and all glaucomic symptoms have disappeared. The blind eye was treated, with a return of the normal tension, but no improvement in vision.

A note on the above case by George M. Gould states that he has had experience in four cases, in which for several years the tension and vision have been kept normal by firm massage with the finger and by means of the lid.

Pallor with Unusually High Blood Count.—

C. N. B. Carnac reports in the *Medical Record* of December 24, 1898, a case which is of interest as indicating how fallacious pallor may be in anemia. Prior to the blood examination, the patient suffered from vague pains across the back and about the joints. At the time he came under observation there was peliosis rheumatica over the arms, legs, and trunk. There was marked pallor of the skin, and in order to determine the extent of this supposed anemia an accurate blood count was made. The result gave a total number of red corpuscles amounting to 6,004,000, the white being in a proportion of 1 to 277 red. The hemoglobin varied from 75 to 85 per cent. The author attempts to account for the marked pallor of the patient on the theory that there was a vasomotor disturbance which contracted the blood-vessels of the skin. He reports an additional case in which there was undoubted neurasthenia associated with marked pallor and a red blood count approaching 5,000,000. At the close of his brief reports he asks one or two pertinent questions, suggesting among other things the possibility that the peripheral blood count may not be a true index to the blood value of the system.

SURGERY.

One Thousand Consecutive Cases of Anesthesia.—

Isabella C. Herb reports in the *Chicago Medical Recorder* for December, 1898, one thousand consecutive cases of anesthesia. Of these, 397 were males, 603 females; 14 were under one year of age, 7 were over seventy years of age. The youngest was thirty-six hours old, the eldest seventy-seven years.

Chloroform was used alone 110 times, ether three times; chloroform and ether in all of the other cases. The longest duration of chloroform was fifty-two minutes; ether, seventy-seven minutes; chloroform and ether, two and one-half hours. Shortest duration of chloroform anesthesia, five minutes; chloroform and ether, ten

minutes. Average amount of anesthetic used was 8 cubic centimeters of chloroform, 115 cubic centimeters of ether. The average time to produce surgical narcosis, not unconsciousness, was eight minutes. The shortest time for induction was one minute.

The method used in the Augustana Hospital service of A. J. Ochsner was introduced by Lawrence H. Prince in 1896. The day before the operation the patient is subjected to a thorough examination, when the condition of the heart, lungs, and kidneys is noted. A warm bath is given to stimulate excretions. In order to have the alimentary tract in the best possible condition the diet is limited to liquids, and one or two ounces of castor oil is given, to be followed the next morning by a warm enema. The face is anointed with vaselin, a thick pad of moistened cotton placed over the eyes, and anesthesia commenced, the patient being instructed to count after the anesthetist. The inhaler used is the Esmarch mask covered with three or four layers of gauze; the same mask is used for chloroform and ether, and the drop method is always employed. Chloroform is given until the patient is asleep or insensible, when ether is substituted. If, however, at any time during the administration of the chloroform the breathing becomes shallow or the heart embarrassed, the chloroform is stopped altogether, suspended for a time, or a few drops of ether given with the chloroform. The two anesthetics are kept in separate bottles; in this way the exact amount of each can be regulated according to the discretion of the anesthetist, which is a great advantage.

The simple Esmarch mask is superior to any other for ether, as well as for chloroform, as it allows of an abundant mixture of air, which avoids danger, and patients do not become so thoroughly saturated with the poison; consequently lung and kidney complications are decreased, and there is less retching and vomiting afterward. No drugs are ever used either before or after the anesthesia. As soon as sleep is induced the lower jaw is hooked over the upper and held in this position. We deprecate the use of gags, because they throw the jaw backward, the very thing to be avoided. The head should be on a level with the body, a small hard pillow being preferable to a feather pillow. The patient is not removed to the operating table till thoroughly asleep, and this is done as gently as possible.

The pupilary reflexes are an infallible guide to the degree of narcosis. No attention is ever paid to other reflexes; touching the cornea is unscientific and tells nothing. A contracted immovable pupil teaches us that we have surgical narcosis, a dilated immovable

pupil is a danger sign, while a dilated pupil which reacts to light shows only partial anesthesia.

In the one thousand cases artificial respiration was performed six times, Sylvester's method being used. The author comes to the following conclusions:

1. If anesthetics are given carefully, according to the method described, difficulties of any kind are experienced in only a small proportion of cases.

2. A dilated immovable pupil is a sign of danger before heart or respiration show any change.

3. The Esmarch mask is superior to any other for ether.

4. The method described requires less anesthetic and a shorter time for induction of narcosis.

5. Patients quickly revive when given fresh air, without the use of drugs.

Treatment of Septicemia by Blood-letting and Infusion of Salt Solution.—

H. H. Young, in the *Maryland Medical Journal*, November 19, 1898, gives a graphic description of a case of general infection in which infusion of normal salt solution was employed and in which the results were remarkable. We append the detailed history of the case, which shows graphically the progress of the disorder.

DETAILED HISTORY OF CASE.

Day.	Time.	Amount of Solution per Cc.	Pulse.	Temperature.	Remarks.
1st.	10.25 A.M.	.....	113	100.4	Operation—appendectomy; evacuation large abscess.
	11.25 "	.....	92	.....	Operation ended; patient in good condition.
	5.30 P.M.	.....	88	101.4	Doing well.
	11.00 "	.....	104	.....	Very restless.
2d.	3.00 A.M.	.....	118	103	Vomiting; abdomen soft, not tender.
	Noon.	.....	146	104	Cold sponge; pulse much weaker.
	1.30 P.M.	.....	164	.....	Strychnia, 1-60 gr. every hour.
	4.30 "	.....	170	105	Pulse very weak; patient very restless; condition rapidly getting worse.
	4.45 "	700	.....	.....	Infusion beneath right breast, 1½ pints salt solution.
	5.00 "	120	.....	.....	120 Cc. salt enema retained.
	5.45 "	.....	156	105.5	Pulse improved by infusion, but fever gradually increasing.

DETAILED HISTORY OF CASE.—*Continued.*

Day.	Time.	Amount of Solution per Cc.	Pulse.	Temperature.	Remarks.
	6.30 P.M.	.....	160	105.8	Condition of patient becoming rapidly worse; pulse very weak.
	7.00 "	.....	.....	.....	Operation—exposure of basilic vein; removal of 2½ ounces of blood; intravenous infusion 1300 Cc. (1½ quarts) of salt solution.
	7.10 "	.....	156	105.8	Infusion begun.
	7.30 "	600	148	.....	Pulse improving in strength.
	8.00 "	1300	130	104	Pulse full and strong; general condition of patient remarkably improved.
3d.	1.00 A.M.	.....	130	104	Condition of patient greatly improved since infusion.
	2.45 "	.....	146	104	Pulse becoming weaker again; temperature not rising.
	4.30 "	.....	146	103.8	Pulse very weak; patient restless, delirious; preparations made for another intravenous infusion.
	6.45 "	.....	146	103.8	Left basilic vein opened; infusion begun.
	6.55 "	200	120	.....	Pulse slower, but weak.
	7.02 "	600	120	.....	Pulse much stronger.
	7.08 "	1000	120	103.2	
	7.17 "	1500	116	.....	Patient much stronger and now perfectly rational.
	7.28 "	2100	112	.....	Patient says he feels "full" all over.
	8.10 "	2500	108	102	Pulse very full and strong; general condition greatly improved; complains of "fulness" all over body; 2500 Cc. (2½ quarts) have been introduced; infusion stopped.
	9.00 "	.....	.....	.....	Patient has been very quiet since infusion; now sleeping.
	9.30 "	.....	.....	.....	Infusions have had a marked diuretic effect; 25 ounces voided in past 12 hours.
	11.30 "	.....	100	.....	
	12.00 "	.....	104	101.2	Sleeping soundly.
	10.00 P.M.	.....	96	101.3	Condition fine.
4th.	6.00 A.M.	.....	84	101.3	Pulse strong; general condition good.

NOTE.—Subsequent convalescence uneventful.

The author thinks that all toxic conditions come within the province of the depletory venesection and saline infusion, not alone the surgical septicemias, but the toxic states of typhoid, pneumonia, diphtheria, and malaria. He thinks there is no reason why the procedure should not be repeated as many times as is necessary to combat blood infection.

In a case of severe malarial coma last summer, Dr. Schenck, at his instance, removed thirty ounces of blood and followed it by an infusion of nearly two quarts of salt solution, with very good effect. The loss of healthy corpuscles is more than compensated by the removal of parasites, toxins, and dead corpuscles.

The Treatment of Hip Disease.—

B. E. McKenzie, in the *Canadian Practitioner and Review* for January, 1899, has a review of this topic. There is nothing distinctively new in his contribution, but he gives a succinct account of the underlying principles in the management of this common disorder. He indorses the essential features of the Thomas splint and lays stress upon fresh air and constitutional treatment. His conclusions are summarized as follows:

1. Hip disease is a local manifestation of a constitutional disease.
2. Early operative interference is seldom justifiable.
3. As soon as softening can be determined, the surgeon should operate and obey indications, observing all care not to injure needlessly the mechanical integrity of the joint, and knowing that he is but aiding Nature by removing tissue that she has already cast off.
4. In the management of the wound the principles of asepticism and antisepticism must be carefully observed.
5. From the earliest moment efficient protection for the joint should be secured and constantly maintained by a well-fitting mechanical appliance.
6. Constitutional treatment is indicated as in other tubercular affections. Great emphasis should be laid on obtaining the freest exposure to sunlight and fresh air.
7. After excision a perfect recovery is never effected, the mechanical integrity of the joint having been interfered with.
8. Following mechanical and constitutional treatment, perfect restoration of function is sometimes secured.
9. Even when softening of tissue occurs and necessitates incision, there is sometimes a perfect restoration, and frequently a highly useful return of joint function.

A New Operation for Hemorrhoids.—

H. J. Schiff (*Medical Record*, Dec. 31, 1898) reports what he regards as a new operation for hemorrhoids. The operation is preceded by a thorough stretching of the sphincter; a plug of iodoform gauze is then passed into the bowel. If there is a circle of hemorrhoids it is divided into quarters. Operate on one quarter, or one

hemorrhoid, as the case may be. Seize the mass or hemorrhoid with a clamp, and while making traction make an elliptical incision encircling the mass and carefully cut from the cutaneous surface, inward and upward, leaving the vessels to be severed last. As soon as the vessels come into view, grasp them with an artery clamp and separate the entire mass from its connections with the bowel. Ligate the vessels and suture the mucous membrane and skin.

In all cases the old rule of leaving mucous membrane between the masses must be adhered to; otherwise there will be nothing to suture. After suture withdraw the iodoform plug.

The claims for this operation are:

1. The patient is well in from three to five days; there is no lengthy convalescence.

2. There is less pain during convalescence than follows any of the other operations.

3. By the fifth day the patient is able to attend to his business.

4. The only difference in time of performing this operation and the clamp and cautery operation is the time consumed in suturing.

5. There is less danger of secondary hemorrhage in this operation than in Allingham's, or the cautery operation.

The Open Operation in the Treatment of Recent Fractures of the Patella.—

C. Phelps, in the *New York Medical Journal* of December 17, 1898, contributes what may be regarded as an addendum to the paper of C. A. Powers at the last meeting of the American Surgical Association. The statistics gathered by Phelps strongly support the view that early operative measures in this fracture afford better results than non-operative treatment, and that such measures do not necessarily involve danger to the life or limb of the patient.

He gives a table of 420 cases operated upon by the leading New York surgeons; 410 gave apparent osseous union. There was superficial suppuration with ankylosis in twenty-one cases. But three deaths occurred: one from carbolic acid poisoning; the second, delirium tremens and Bright's disease; a third, delirium tremens.

Of this number, 118 were operated by Phelps; he adheres to the operation which he has used from the beginning, and which he described first in 1890. He makes free lateral incisions, irrigating the joint, and after removing the interposed fibrous tissues coapts the fragments with silver wire. The joint cavity is then closed by soft suture.

The author says that the time for a final verdict has arrived, and

that a sufficient number of cases have accumulated to show that it is a safe and justifiable procedure and that the results are better than non-operative methods.

Holocaine in Eye Surgery.—

E. C. Ellett, in the *Philadelphia Medical Journal* of November 6, 1898, reports that he had used this drug quite extensively during the previous winter. The operations done under the drug include eleven cataract extractions and eleven iridectomies. One advantage which he claims for this drug over cocaine is that it is antiseptic and that it anesthetizes the deeper structures so that the iridectomy is painless. The solution employed was one per cent. As the drug is but sparingly soluble in cold he dissolves it in hot water, using a porcelain vessel for this purpose, as he claims that the alkali in the glass is dissolved out and that this precipitates some of the drug. As it is in itself an antiseptic, it is not necessary to use anything else in connection with it. While the drug is not affected by boiling water, it of course is not necessary to sterilize it, as the solution of one per cent is said to destroy the pus-forming bacteria in twenty-four hours. When dropped into the eye it causes smarting similar to that produced by a five-per-cent solution of cocaine. In about one minute after its instillation anesthesia is sufficient to admit of the removal of a foreign body.

Two very distinct advantages over cocaine are mentioned by the author: that it does not contract the blood-vessels and hence does not affect the healing process, and that it does not dilate the pupil.

Three Hundred and Sixty Gall-stone Operations.—

H. Laehr reports in *Volkmann's Klinische Vorträge* for October, 1898, the results of operations upon gall-passages during the past eight years, giving the results in three hundred and sixty operations, nearly one-half of which were done in the past two years. The remarkable presence of gall-stones in the female sex is shown by the fact that of the three hundred and seven individuals operated upon, two hundred and fifty-five were women. The mortality was 11.7 per cent; this percentage was given by forty-two deaths, of which thirty are attributed to causes not related to the operation. The operative mortality is set down at 3.8 per cent.

The author attaches great importance, and indeed attributes the signal success which he has achieved in these operations, to the strictest asepsis; he does not use rubber gloves, but his method of

sterilizing the hands occupies nearly a half-hour in its application. He restricts himself to one attendant and one nurse; in this manner he thinks the chances of infection are lessened.

Bottini's Operation for Enlargement of the Prostate.—

A. J. Downs, in the *Philadelphia Medical Journal* of December 24, 1898, reports a case in which this method was employed successfully. He is an enthusiastic supporter of the operation, and thinks that it is remarkable that so conservative and useful a procedure should have so slowly gained recognition. Some of the untoward results which have been said to follow, such as dribbling, he thinks are due to too shallow cuts and too low a temperature of the knife. Too low a degree of heat brings us near to where Bottini started. He charred the tissue, not deeply, and there was consequently too little immediate loss of substance; later there was swelling with occlusion. Heat sufficient to consume tissue will afford space enough for voluntary urination within a few hours and a wide space after a few days. The incisions should be multiple, three at least, and should be carried deeply into the substance of the prostate.

THERAPEUTICS.

Special Hospitals for Consumptives of Limited Means.—

James M. Anders, in the *Therapeutic Gazette* of December 15, 1898, treats of the value of sanatoria and special hospitals for the treatment of poor consumptives. The statistics and facts which he advances point to the following conclusions:

1. That pulmonary tuberculosis is proportionately far more common, as well as more inauspicious, among the lower than among the higher classes.

2. The lack of proper facilities for the treatment of the poor afflicted with pulmonary tuberculosis is a potent factor in maintaining the enormous death-rate from this disease.

3. Special hospitals in which every hygienic detail can be arranged with precision are far superior to separate wards in general hospitals for the treatment of cases of pulmonary phthisis.

4. The admission to, and care of such patients in, the wards of general hospitals with those suffering from other forms of illness, as is the custom still in some and to a limited extent in many institutions, is to be energetically deprecated. There is serious danger of

transmitting the disease under these circumstances, particularly when the breaking down or suppurative stage is reached.

5. The mortality figures show a reduction of nearly 50 per cent in consequence of the creation and continued operation of special hospitals for consumptives.

6. Sanatoria near large cities afford better advantages than so-called special hospitals in densely populated centers, whilst climatic sanatoria, if properly situated, properly officered, and well equipped, show results that surpass those of all other known methods of treatment in the earlier or incipient stages of the disease.

7. Sanatoria lessen the mortality-rate of phthisis in communities in which they are situated.

The Treatment of Epilepsy Without Drugs.—

The conviction that the bromides have a very limited range of usefulness in the treatment of epilepsy is a growing one. The mere suppression of the convulsions is not a cure of the disorder. The disturbance of nutrition and lessened stability of the nervous system, as a result of the bromide treatment, is often a more serious matter than the epilepsy itself.

Henry B. Hurd read an excellent paper before the Johns Hopkins Hospital Medical Society (*Johns Hopkins Hospital Bulletin*, December, 1898). He says that within a few years past a new departure has been made in the treatment of epilepsy. The former treatment by medicine alone has been unsatisfactory, and remedy after remedy has been used and discarded. Surgical operations also have been performed, in some cases with good results, but in a great majority of instances with little benefit.

In epilepsy we do not deal with the epileptic paroxysm alone, but with a complexus of symptoms, among which the epileptic convulsion may be regarded as the last of a series of morbid processes.

The majority of epileptics possess an extremely weak nervous system, perhaps inherited, and the individual patient is always unduly susceptible to disturbing influences. It has been known for a long time that the causes of epilepsy varied. In many instances epilepsy has been thought to be due wholly to disturbances of digestion, but it is now pretty evident that we have to deal with a more serious trouble. It is not primary digestion alone but often secondary digestion that is at fault. There is some defect in metabolism, as a result of which the system becomes poisoned. The neurotic organization to which he refers, being unduly responsive to

the action of this poison, is overwhelmed by it and we have an epileptic paroxysm. It was formerly thought that if some remedy could be found to control the paroxysm epilepsy was cured, but now we know that remedies which merely control the paroxysm do very little to cure the disease. It is like tying the hands of a maniac to cure his excitement. The general effect of the bromides and of similar remedies has not been to prevent the generation of the poison in the system, but merely to restrain its manifestation in an epileptic attack. Such restraint may be effective for a time, but finally the poison becomes so overwhelming that a paroxysm can no longer be restrained, and a furious convulsion follows which probably equals in force the sum of the minor paroxysms which had been prevented by the remedy. It has been found by experience that the condition of such a patient is worse than if he had more frequent but milder convulsions.

Recent observations have indicated the character of the poisonous substances which enter the circulation and produce the epileptic seizure. They are probably leucomaines, but their exact relations to the disease have not been fully worked out, and much remains to be done to determine the means of preventing the formation of these poisons in the system. There has, however, grown out of these investigations a system of providing for epileptics which promises much for the future. In this system it is not intended to substitute hygienic and moral influences for medical treatment, or to decry medical treatment, but rather to relinquish the idea of depending upon drugs alone in the treatment of the disease.

From our present knowledge the best treatment for an epileptic is an open-air life, carefully selected food, and a judicious amount of labor.

Phenalgin.—

J. A. Hofheimer, in the *New York Medical Journal* of December 24, 1898, calls attention to this new drug from the coal-tar derivatives. He first used it on himself for a congestive headache. Phenalgin is an ammoniated synthetic coal-tar product, manufactured by a process which holds the ingredients combined in an active form admitting of their free separation in the economy. It is described chemically as a compound product of the amido-benzene series ($C_6H_5NH_2$) plus ammonia, or ammonio-phenyl-acetamide. The ammonia is almost volatile and admits of prompt liberation in the stomach in a nascent state. The effect of this chemical change is to act primarily as a diffusible stimulant and prevent undue cardiac

depression, which is so prone to follow the administration of most coal-tar products.

Phenalgin is given in powder, tablet, or capsular form, it being a fine white powder of pungent odor with slight taste, and it is practically insoluble. It is not disagreeable to take. The dose is ten grains.

The author found it useful in all cases where pain was a prominent symptom, acting especially well in rheumatic and neurotic cases. Like most drugs of its class, it has antipyretic powers; in malaria, used alone or combined with small doses of quinine, it aborts or shortens the paroxysm. It has hypnotic as well as anodyne properties, and is of service in cases where opiates are indicated, especially as it leaves no bad after-effects.

Thyroidism.—

Under this title G. J. Preston writes in the *Maryland Medical Journal* of December 10, 1898, against what he terms the unwise empirical administration of thyroid extract. He describes the case of a woman who for fifteen years had had a slight enlargement of the thyroid, which never gave inconvenience. The small tumor was probably cystic in nature. Some one advised her to take thyroid extract, and she took daily five-grain tablets for over three months. After some weeks' medication she began to notice trouble about the heart. When examined she had a pulse of 140. The heart sounds were perfectly normal, and there was no enlargement of the organ. She showed the characteristic fine tremor of Graves' disease.

The thyroid extract was at once discontinued, and a week later the pulse had dropped from 140 to 110 and the tremor was distinctly less. Eight days later the tremor had entirely disappeared, and the patient had no further trouble, though her pulse kept up to 100. In this case the administration of the thyroid to a patient with a slight enlargement of the gland induced most of the symptoms of Graves' disease, excepting the exophthalmus.

Atropine in Bronchial Asthma.—

V. Noorden (*Munch. Med. Woch.*, p. 1251, 1898) recommends Trousseau's atropine method in the treatment of asthma. He thinks if the treatment is systematically carried out, over a period of several weeks, that a cure will result in the majority of cases. Atropine is of no value in cases complicated by emphysema or by chronic bronchitis. It is to be used in the so-called essential asthmas, and he does not mention the most frequent variety of these, viz., those

having their origin in the nose or some other source of reflex irritation.

The atropine is said to have no effect upon the attacks themselves, but the treatment should be methodically carried out under the physician's directions. The beginning dose is $\frac{1}{120}$ of a grain, which is gradually increased until the patient takes $\frac{1}{20}$ or $\frac{1}{15}$ of a grain. Naturally this large dose is only to be employed in cases that are under close observation; when the maximum is reached the dose is gradually diminished. The author claims that this method will, in the great majority of cases, relieve or very greatly improve uncomplicated forms of the disorder.

Apocynum Cannabinum in Treatment of Dropsy.—

In our January issue (p. 76) we abstracted an article on the above subject from the *Therapeutic Gazette*, which had the attractive designation, a "vegetable trocar." Since then Dr. Jennings has tried the drug in three cases and found it to be devoid of value.

In the December 15 issue of the *Therapeutic Gazette* there is an original article from the pen of W. D. Turner, in which he says that the communication of Dr. Jennings bears direct evidence that the drug employed by him was not the *Apocynum cannabinum*, but the *A. androsæmifolium*, which is similar in its general and external appearance and grows commonly in the same localities; also that gatherers and manufacturers may easily mistake the two varieties. The former alone is useful in the treatment of dropsy.

Turner has had thirty years' experience, and he thinks that there is no indigenous herb that is more certain in its action than *A. cannabinum*. He does not find its greatest range of application in local dropsy, but in general anasarca. In cases complicated by renal degeneration it frequently fails, or at most only gives temporary relief.

Tribromphenol-Bismuth in Chronic Suppurative Otitis Media.—

L. S. Somers (*New York Medical Journal*, Dec. 25, 1898) regards this as one of the best drugs in the treatment of this obstinate affection. Its physical properties recommend it for aural use, being odorless, impalpable, and non-irritating. It is greenish-yellow in color, neutral in reaction, insoluble, and, on account of the high temperature required for its decomposition, can be sterilized without affecting its value. As the drug is slowly decomposed in the ear, it exerts its action for a considerable time, keeping the mucous surfaces under its antiseptic influence for a longer period than any

other remedy. The drug has little or no influence unless brought in immediate contact with the pus-producing surfaces, therefore the tympanic cavity must be thoroughly cleaned. Under its use epithelial growth is promoted and cicatrization occurs at an early period, while its sedative action allays pruritus and consequently allows of more rapid repair of the tissues.

A Powerful Disinfectant.—

Krönig and Paul, in a recent issue of the *Philadelphia Polyclinic*, claim to have discovered a most powerful disinfectant in a mixture of potassium permanganate and hydrochloric acid. This solution kills the most resistant spores from extremely virulent anthrax bacilli in a few minutes, while it is cheap, non-toxic, convenient, and fully equal to a five-per-cent solution of sublimate. They ascribe its remarkable microbicidal power to its extremely active ions. As a disinfectant for the hands they recommend the formula: 45 Cc. of pure hydrochloric acid; diluted with 1600 Cc. of water; add 500 Cc. of a five-per-cent solution of potassium permanganate. The solution stains the skin, but the stain is easily removed with a 1.3-per-cent solution of oxalic acid.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Prevention of Puerperal Infection in Private Practice.—

G. E. Shoemaker, in the *Therapeutic Gazette* of December 15, 1898, has an excellent article on the prevention of puerperal infection in private practice. He says that no question can be raised as to the life-saving value of cleanliness in obstetric institutions; such have become the safest place for the lying-in woman. A curious anomaly exists in relation to the woman delivered at her home. Such patients, he says, present a far too high mortality from infection, and those who escape with life are in many cases more or less disabled. These facts attract little attention because of the absence of reports, the deaths in many cases masquerading under the terms pneumonia, typhoid fever, malarial fever, inflammation of the bowels, or peritonitis.

The causes of this mortality the author finds to some extent in the attitude of the physician. An active cause of puerperal infection lies in the imperfect cleansing, or imperfect guarding when cleansed, of the hands of the physician, which come directly in contact with the patient, and in a certain lack of care as to the clothing

worn in the lying-in room. It is very common to hear remarks from physicians and laymen about the wonderful changes which have been made in the dangers of surgery and childbed by modern discoveries. True, a new era has dawned; but unfortunately the change has been made in the possibilities of prevention, and not always in the realities as carried out by those who smile sarcastically about the necessity of attention to details. It is not to be supposed that contagions are different from what they were formerly. The same risks are assumed now as fifty years ago, when a physician visits a case of erysipelas or diphtheria and goes afterward to the lying-in chamber. The risks are not eliminated by rinsing the hands for a minute or two in a carbolic acid or corrosive sublimate lotion.

The writer yields to none in his insistence upon painstaking aseptic and antiseptic technique, particularly in major surgery, but he is convinced that the essentials of obstetric asepsis are not complicated. They consist in clean hands and in keeping them so throughout the labor (this means keeping them off chairs, clothing, etc.); in refraining from such internal examinations as are not necessary; in careful external washing of the patient and in causing her to wear baked napkins during convalescence. Four simple things, if universally and carefully used to-day, would very nearly banish puerperal sepsis: (1) The hand scrubbing-brush; (2) the bichloride of mercury or equivalent solution for hands and external genitals; (3) the baked (*i.e.*, sterilized) napkins; (4) the clean suit.

Four-fifths of the battle for asepsis is won when the physician will carry with him a hand scrubbing-brush, new for each case, and be willing to spend ten minutes in its use, with hot water and plain soap. The bichloride solution when used after the scrubbing has tenfold cleansing power. As to the dressing, no chemicals and no elaboration are necessary. There is not a house in the land important enough to boast a bake-oven where the most perfect aseptic dressing or napkin known to surgery cannot be prepared in an hour by simply tearing and folding the material — the conventional old muslin is good—into proper sizes, wrapping the whole supply into a bundle covered with newspapers, and baking it in the kitchen oven one hour at such temperature as will just char the outside wrappings. The nurse must be instructed to refrain from careless and unnecessary handling of these napkins, and to take them one at a time from the bundle as needed. On the contrary, how often, even in good houses, does the nurse tear these napkins

from old garments, saved up in the closet, and apply them at once to the vulva.

Another item of importance is the clothing worn by the physician in the lying-in room. Not uncommonly does the physician find himself seated or kneeling upon the bed during the exigencies of a labor case. Should he ever have worn a white suit he might be surprised to find how apt it is to become stained with blood or fluids. Ordinary wearing apparel receives the same stains, but does not show them. Street clothing is brought daily in contact with erysipelas, diphtheria, scarlet fever, and indeed septic cases of labor or miscarriage. Care in changing and airing the clothing is no doubt useful and must not be omitted, but the wearing of a white duck suit drawn over the ordinary clothing, if not replacing it, is a far better measure. Such a suit may be slipped on in three minutes, and its cleanliness will surely be appreciated by every woman, while its moral influence will not be lost on the nurse.

Lastly, let us remember the influence of the physician in setting a high standard for the nurse, and the great power he may wield for good by gradually educating his community to the better appreciation of the hygiene of the lying-in chamber. The trained nurse is to-day found only occasionally outside of the large cities. The great mass of the population the country over is attended to by women without special education, who adopt the lowest standard permitted by the physicians of their community.

A simple copper box should be provided for boiling the scissors and perineum instruments or forceps. Such a box can occasionally be found in the market, but as sold is usually too heavy, or too elaborate and too expensive. It can be made by any tinman, out of sheet copper tinned on one side, at a cost of from one to two dollars. It should go easily into the bag, which it may fit along the bottom, or it may be quite narrow and shallow. The lid should go entirely inside the box for compactness in carrying, and when reversed makes an excellent tray. The boiling may be done on the kitchen stove; an alcohol lamp is only a complication.

This paper is suggested by a need which the writer's observation has taught him exists throughout the land. It makes no attempt at a detailed description of an ideal outfit for a consultant, or for one who wishes to make a display. It is intended as a plea for a renewed effort to grasp the essentials of asepsis on the part of the hard-worked practitioner in his every-day work. Such effort will surely be repaid in freedom from anxiety and extra labor in the after-treatment of confinement cases, in the saving of life and health and usefulness to multitudes of women.

Significance of Pain in Gynecological Diagnosis.—

In the *Canadian Practitioner and Review* of January 18, 1899, is a translation of Ernest Hall from a recent number of *La Gynæcologie* on the significance of pain in the diagnosis of disorders peculiar to women.

Periuterine Pain.—This variety has its origin in the tube, ovary, or parametrium. It may be primary or transferred; one variety is called, for the want of a better name, pelvic neuralgia. In acute inflammation of these parts the pain is deep and lancinating and radiates throughout the pelvis. In the chronic inflammatory processes, where cicatrices, adhesions, or scleroses are present, the pain is local and closely related to the diseased part.

1. *Pain in Ovary.*—The sclerotic or sclerocystic ovary is usually painful. Where the primary inflammation is slight, or the sclerotic processes indicate a vicious type of degeneration of the ovary, the rupture of the follicles is painful and the work of elimination slow and preceded by a long period of congestion with apoplexy of the cortical substance. This process tends to hypertrophy and is frequently attended by hemorrhage. In such cases the menstrual period is painful. If there be prolapse of the ovaries with adhesions, the local pain is increased. In the intracatamenial period, when the ovaries are primarily affected, there is an alternation, the pain being on one side one month and on the other the next.

2. *Pain in Fallopian Tubes.*—The pain of chronic salpingitis is due to exudations causing adhesions with the neighboring organs, and to distention of the tube, usually at the menstrual period. Small and lax adhesions and serous exudations are insufficient in themselves to cause pain; active inflammation and the presence of infection are needed to make this condition painful. The prolapse of the tube toward the cul-de-sac is always troublesome, and causes slight pain and uneasiness. In salpingitic pain the patient may complain of pain on one side of the pelvis, when upon examination inflammatory exudation or a tumor may be discovered upon the other side. A displaced tube lying across the posterior face of the uterus may form a tumor fixed to the pelvis on the opposite side. The pain in these cases is located in the fine nerves which are distributed upon the tube, through the corresponding ligament. The pain of salpingitis is generally fixed and undergoes increase under menstruation — not previous to menstruation, as in ovaritis. But after menstruation it undergoes marked decrease and reappears two or three days later. This latter pain is caused by the traction of the adhesions which fix the tube to the pelvis.

3. *Pain in Inflamed Tubes and Ovaries with Adhesions.*—Pain in this condition partakes of the characters previously described. The pain is sometimes in the ovary, sometimes in the tube, the degree of pain depending to a large extent upon the sensibility of the patient. It may be discovered by direct examination that the location of the pain is in the cul-de-sac. In all cases it is present behind the cervix and is easily produced by a direct pressure. Pain is also present upon the abdominal walls and in the iliac region corresponding to the affected side. It is both deep and superficial. If the speculum be introduced roughly, it occasions pain; the same is true of vaginal douches. Cold increases the pain, and too much walking gives great fatigue. Mental and physical exhaustion also add to the pain, and in some women slight annoyance will revive the pain. The return of each menstrual period increases the suffering. The duration of the pain varies with different patients and is increased by congestion of the womb and coitus. It may be accompanied by turgescence of the cervical mucous membrane and leucorrhea. The pain may be throbbing, or extremely sharp. The intensity of the pain does not correspond to the importance of the lesions. There may be scarcely any pain from extensive salpingo-ovaritis, while a small lesion may give severe pain.

4. *Pain in Perimetrium.*—In this class we find exudations, adhesions, cicatrices, and chronic infiltrations of the cellular tissue which directly encircles the uterus. Every cervical, ovarian, or tubal lesion reacts upon the perimetrium, or upon the ligaments of the affected parts. Pain in lesions of this part does not always correspond with the location of the lesions which are found by physical examination. A neuritis or a special nervous susceptibility may be present. True neuralgia is allied to the neuroasthenic constitution, and is at all times distinct from hysteralgia, which is found in the median region of the pelvis and which is shown by direct examination to be located at the internal os.

The Diagnosis of Rickets.—

A. H. Tubby (*Pediatrics*, Jan. 1, 1899) has noticed in examining a number of rickety children a peculiar appearance on the dorsum of the foot which is occasionally seen upon the hand, and which he believes has not heretofore been described. The soft tissues in this situation in rickety children are thickened and slightly elevated. The color is compared to that which would be produced by an injection of yellowish-white wax underneath the skin. A distinct coloration is given to the skin, which appears semitransparent.

He says that in a healthy child the skin of the dorsum can be pinched up between the fingers and moved independently of the subcutaneous tissue. In many rickety children the skin and subcutaneous tissue are inseparable, and only a more or less thick fold composed of both can be taken up. In early cases of rickets this swelling may be semifluid; in those more advanced it is solid, and later it becomes hard and resistant. Of one hundred tabulated cases of rickets, eighty-six had dorsal pads as here described. The eighty-six cases were divided into three classes:

(*a*) Those children in whom the pad was marked, but was semifluid, and no affections of the bones could be felt. Of the eighty-six, twenty came under this category, the average age being seventeen months and the duration of the rachitic attack two months. This statement bears out another observation, namely, that before the signs of rickets are seen or felt in the bones the skin and subcutaneous tissues generally are affected, being puffy and of a tallow-like appearance.

(*b*) Those in whom the pad is well marked, nearly dome-shaped, and solidly edematous to the touch. Of the eighty-six cases, forty-nine presented this appearance; the average age was about twenty-seven months, and the average duration of the attack was eleven and three-fourths months.

(*c*) Those in whom the thickening was mainly bony, the swelling being of a firm, hard, resistant character, and beaded. Of the eighty-six cases, seventeen came into this category, their average being four years and the duration of the disease twenty-seven months.

If cases are watched over a long period, the pad goes through three stages: first, semifluid confined to the subcutaneous tissues; second, semisolid, with some implication of the bones; third, firm, resistant, and irregular enlargements, due to bone lesion, which is the last to disappear.

In conclusion the author advances the following points:

1. In a large proportion of cases of rickets the feet show definite dorsal pads, and in a smaller proportion of cases the same appearance is seen on the backs of the hands.

2. This pad is of varying consistency and origin.

3. If the disease be of recent duration, two to six months, the thickening is subcutaneous and is semifluid.

4. If rickets has existed from six to eighteen months the pad is marked, and is made up of thickened subcutaneous tissue and periosteum and overgrown epiphyses.

5. At a period of eighteen to thirty-six months after the onset of the disease the subcutaneous pad disappears concurrently with the general flabbiness and undue pallor of the skin, and leaves the bony changes apparent to the touch.

Diffuse Hypertrophy of Both Mammæ in a Virgin.—

Among the tumors of the breast the true diffuse hypertrophy is one of the rarest. Billroth in his great experience saw but two cases. Prof. E. Fränkel, of Breslau (*Deutsche Medicinische Wochenschrift*, No. 25, 1898), reports a case that came under his observation. The patient was a virgin, 30 years of age, without hereditary taint. She came to the polyclinic in April, complaining that since February her breasts had been rapidly enlarging. She claimed to have been perfectly well up to this time. Her menses began in her seventeenth year, and had been normal in every respect. From that time (1891) until the end of 1897 she had amenorrhea, unaccompanied by any inconvenience or illness. In January and February of last year the menses began again, but changed somewhat in character. From that day (Feb. 17) began the rapid growth of the breasts. Previous to that time the breasts had been gradually enlarging for six months, but so gradual was the enlargement and so minimal the inconvenience that she took no note of the condition. Indeed, at no time had she experienced any pain or unpleasant symptoms of a local nature. She found herself, however, gradually growing weaker, anemic, and emaciated.

The subjective examination revealed a moderate degree of chlorosis, hymen intact, retroversio uteri atrophici, and diffuse hypertrophy of the mammæ. The circumference of the growths was twenty-eight and thirty-six centimeters respectively; circumference of the chest over the mammæ 100 centimeters. There were no circumscribed nodules to be felt. Axillary glands were unaffected. Colostrum could not be expressed. The process was a true diffuse glandular hypertrophy.

The author in concluding speaks of the probable relation existing between mamma hypertrophy, the menses, and the development of the genitalia, and cites in support of this theory the recent investigations of Schein (*Wiener Medicinische Wochenschrift*, 1898, No. 18), who maintains that the secretion of milk after childbirth occurs as a result of a hyperemia of the mammæ. This hyperemia occurs supposedly as a result of the large amount of blood relieved of duty after childbirth. He also calls attention to the fact that a long-continued nursing produces an atrophy of the uterus—*Lactationsatrophie* of the uterus—which may in time become a permanent

atrophy. That a process of sucking the nipples will stop a hemorrhage of the uterus due to myoma, etc., has often been demonstrated. Reasoning upon this line, the author concludes that the amenorrhea of six years' duration (1891 to 1897) was accompanied by a hyperemia of the breasts, the final result of which was the diffuse hypertrophy. "The undoubted relation of the breasts and thyroid gland to the female genitalia, and the regulation of the disturbances in circulation of the pelvic organs through vicarious swelling of these glands, certainly merit a further clinical and experimental explanation. Its existence is not to be doubted."

A Speedy Method of Dilating a Rigid Os in Parturition.—

J. F. Gainsborough, in the *British Medical Journal* of September 17, 1898, describes a method of dilating a rigid os. He had been in attendance on a primipara for forty-eight hours. At the end of that time there was practically little or no dilatation. The patient was losing self-control, and as chloroform was contraindicated he decided to incise. Before doing so he employed a solution of cocaine of ten-per-cent strength. After waiting four minutes he prepared to make the incision, when to his surprise he found that the rigidity had entirely disappeared. Thinking that possibly the first case might have been accidental, he waited until a second case presented itself, in which a similar result followed the application of cocaine; he then brought the matter to the attention of the Obstetrical Society of London. Since then he has observed three additional cases in which cocaine acted within a few minutes, and he thinks that there is no reasonable doubt that the result was due to the local anesthetic.

Postpartum Douches.—

Perhaps no subject in the domain of obstetrics has, with the exception of the binder, received more extended discussion than that of the postpartum douche. The January, 1899, issue of the *Philadelphia Polyclinic* states that this practice has been abandoned in the out-patient obstetric service of the Polyclinic. It is regarded as unnecessary if the patient is thoroughly disinfected before she is put to bed. Before labor a copious vaginal douche of lysol or creolin is given. Following labor the patient is again thoroughly cleansed, but no intervaginal douche is given. No case of septicemia has occurred in patients delivered by the assistants in the out-patient department during the past year. All cases of infection during the past year came to them after infection had occurred. Nearly all were mild cases, in which there was a prompt response to appropriate treatment.

FORENSIC MEDICINE.

Poisoning by Substances Sent Through the Mails.—

A case has recently been tried and another reported, in which poison has been administered for homicidal purposes from a distance —that is, the poison has been sent through the mail or by express in candies, and in this way several people have met their death. January 3, 1899, the newspapers reported a somewhat similar case from New York, in which it is stated that Henry C. Barnet, who was reported to have died from diphtheria, was killed by poison. A Mrs. Adams is stated to have been killed at the same time, cyanide of mercury having been administered in both cases. It is said that there is little doubt that the death of Mrs. Adams was not intended, but that of Barnet was deliberately planned.

Barnet's death was surrounded by several suspicious circumstances. He had not been feeling well for several days previous to October 30, owing to a disordered condition of the stomach and a cold. On the day mentioned there came into his possession a bottle of a proprietary powder, which is used as a headache remedy. Whether this bottle was bought by Barnet or whether it came to him through the mail is not known, but it has been said that he received it through the mail. It is stated that he took a dose of the powder and at once became very ill. This illness lasted some ten days, and the death certificate stated the cause of death as diphtheria.

During the ten days of Barnet's illness the greatest precautions were taken to keep the circumstances surrounding the case quiet. To his brother, who called to see him, he stated that he had taken a headache powder, and that it had made him violently ill. He seemed to recover from the effects of the powder in a day or two, and no suspicion was roused in his brother's mind that death was not the result of diphtheria.

We regret that the details of this case do not come to us through a more authentic source than a despatch of the Associated Press.

Cyanide of mercury is a rare chemical and is but infrequently found in drug stores. It is doubtful if it has different properties from other cyanides. The usual form of a cyanide poison is a solution of the acid; next to this, cyanide of potassium, oil of bitter almonds, and cherry-laurel water have been employed. All these substances depend for their poisonous properties upon the amount of cyanogen contained in them. Their symptoms and post-mortem

lesions are practically identical. Death takes place shortly after the administration of the poison, if at all; therefore the statement in this case that death occurred ten days after its administration would certainly throw doubt upon the probability of its being one of cyanide poisoning.

In this connection we would refer to a case abstracted in the January issue of MEDICINE, page 87, in which a large dose of hydrocyanic acid was taken and was followed by deep coma with edema of the lungs; the following morning the individual had fully recovered. This case and the entire literature would go to show that cyanides kill almost immediately or else cause no permanent injury. Perhaps the cyanide of mercury may have different properties from other cyanides.

Roentgen Ray Burns.—

The severe burns caused by *x*-ray examinations have led to a number of suits for malpractice, so that the mechanism of their production has acquired considerable medicolegal interest. Elihu Thomson, in the *American X-Ray Journal* for November, 1898, refers to some erroneous theories which have been advanced to account for these accidents. He emphasizes his previously expressed opinion, that the burns are produced chiefly by those rays of the *x*-ray order which are most readily absorbed by the flesh. Such rays are sent out in large amount when the vacuum in the tube is too low or when the tube is "soft," to use Professor Roentgen's recent designation. A "hard" tube, or one with a high vacuum and requiring a high potential to work it, will give rays that pass freely through flesh, and not being absorbed by the skin cannot do injury.

To avoid the risk of burns, therefore, the author says that we must work with tubes of a high vacuum, which give rise to rays of great penetrating power, or else we must interpose a screen between the tube and the skin, which will absorb the more injurious rays. With tubes which are now in use, which require brief exposure, the danger of causing injury is practically of no importance. There is in fact no danger except in exposures at quite short range lasting for an hour or more.

The Phonendoscope in Testing Simulated Deafness.—

John A. Thompson, in the *Laryngoscope* for January, 1899, says that he was asked recently to examine a man who claimed that he was totally deaf in the right ear. Inspection of the ear showed

catarrhal otitis media. The tuning-fork was heard readily by bone and air conduction by the left ear. He denied positively that he could hear any sound from the fork in the right ear.

The author put the tubes of the phonendoscope in the patient's ears and touched the tympanum of the instrument with the handle of the vibrating fork. The sound was heard very distinctly on the left side only, according to the patient's statement. He held the instrument below the patient's chin, where he could not see it, and attracted his attention to the forks by changing the clamps on it. At the same time, with the fingers of the left hand, he detached the tube from the phonendoscope that connected it with the left ear. When the handle of the vibrating fork was again touched to the tympanum of the instrument, it was immediately heard and the difference of pitch appreciated.

It was thus demonstrated that the deafness was simulated. The tube remained in the left ear, thus allaying the patient's suspicions. As the instrument was not connected to the ear claimed to be healthy, no sound could be transmitted to that side.

The author claims that this is a simple and effective method of detecting simulated deafness in one ear, and superior to any method heretofore described.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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ORIGINAL ARTICLES.

TRANSPLANTATION OF SKIN AND THE ORIGIN OF PIGMENT.

BY LEO LOEB, M.D., CHICAGO.

The experimental work which forms the basis of this paper was undertaken to ascertain the conditions which favored the growth and development of transplanted tissue and the origin of skin pigment.

Ten years ago Karg made experiments similar to mine, after Thiersch had described his method of transplanting skin. He used the dark skin of the negro, interchanging it with that of a white man. He found that grafts from the white man to the negro and from the negro to the white man would grow. After a time the dark skin lost its pigment, and the white skin became black. He made microscopic examinations of the way in which these changes of color took place.

The pigment of skin epithelium is not evenly distributed through the protoplasm of the cell, but is found on the side of the nucleus which is nearest the surface. The deepest layers of the epidermis contain peculiar spider-like cells with long branching processes which are especially rich in pigment and are called chromatophores. Similar bodies are found in the cutis. In guinea-pigs the chromatophores of the true skin differ from those of the epidermis.

Karg believed that the chromatophores had their origin in connective tissue, similar to fibroblasts, and that they played an important part in the color changes observed in grafted skin. When white epithelium darkened, he thought the chromatophores emigrated from connective tissue to the epithelium and deposited their pigment. Black epithelium became white by a reverse process, the chromato-

phores migrating from the epithelium to the connective tissue, carrying the pigment with them.

In my experiments the ear of the guinea-pig was employed. The grafts were cut with a razor, taking as little connective tissue as possible. Where white skin was removed it was replaced by black, and pigmented skin by white grafts.

One of the most striking results of these early experiments was that where white grafts were placed in defects where colored skin had been removed, they would not adhere indefinitely; that this was not due to a failure of technique was shown by the uniformity of results. White skin was invariably shed, in some cases at the end of a few days, and in others a longer time was required. One white graft maintained its connections for four and one-half weeks.

Strikingly different results were reached when black skin was planted in a defect from which white skin had been removed; in almost every case the graft grew into its new position and established permanent connections with the underlying tissues.

The uniformity of these results justifies the conclusion that in the guinea-pig black skin can be successfully transplanted, but white skin cannot. These wholly unexpected results may be of use in solving some questions relating to transplantation of tissues in general. That they have a practical as well as theoretical importance is shown by the recently published reports of the possibility of keeping alive transplanted bone. Pigmented epithelium differs from the unpigmented, from the fact that it contains pigment granules, and it must have a different metabolism. This is proved, as we shall see later, by the fact that the epithelial cells themselves produce the pigment granules. Further, there must be a peculiar arrangement that causes these pigment granules to be deposited only on one side of the nucleus. It is only in the black epithelium, and not in the white, that the spider-like cells — the chromatophores — are to be found.

Concerning this polarity of the cells as it presents itself in the distribution of the pigment, I have still an observation to relate, which I have made quite frequently: When the black epithelium begins to regenerate, the cells adjoining the wound will turn and move toward the scab. Then we may notice that all of the pigment deposits retain their relative position, for they will then be found at the side instead of above the nuclei.

White epithelium, when first transplanted, adheres, and under the microscope its connection with the underlying tissue seems perfect, and quite as good as a pigmented graft. The mitoses are

increased and the epithelium regenerates at its margin. In every case, however, this white epithelium was thrown off. An analogous process has been observed in vegetable grafts by Voechting, and in hydra by Wetzel; this shows the essential unity of the process in higher as well as lower forms. Carnot, whose work was done independently from mine, observed that black epithelium adhered, while white did not. He did not report any microscopical investigation. He states only in a general way that white epithelium does not adhere, without mentioning the secondary disconnection just described.

After transplantation, white epithelium scales off more rapidly than black epithelium. In about eight days it appears thicker than normal and the cells are increased in volume. Before the whole piece is cast off the upper layer of epithelium becomes homogeneous, the scales are shed, and in consequence the graft becomes thinner. At the same time the number of mitoses in the deeper layers is increased; there is a simultaneous increase in new formation in the deeper layers of the skin, while the superficial layers are rapidly desquamating.

In grafting, usually a little space was left between the edge of the transplanted piece and the epithelium. Regeneration began soon, and after several days the two edges could be seen approaching, under the microscope. Curiously, each layer meets exactly the corresponding layer on the opposite side. Where black epithelium adjoins white, it sometimes grows under the transplanted skin, and it is possible that in this manner the white epithelium is thrown off. I have sections that would lead one to think that this is the mechanism, but such a conclusion could only be reached after a closer examination of these stages of regeneration.

An interesting question, raised by the different behavior of pigmented and unpigmented grafts, relates to the ability of the grafts to maintain their vitality. Such a question could be settled by grafting skin of a similar color upon defects made in a like-colored skin. Should it then appear that the white skin is cast off, the difference must lie in the structure of the graft itself, which prevents the white epithelium from obtaining nourishment from the underlying tissue. Should the white epithelium remain fixed, then the difference in behavior of the grafts would have to be referred to some peculiarity in the relation of the transplanted white skin to the underlying cutis, or else to the adjacent pigmented epithelium, by which it grows under the white epithelium and so casts it off. I intend to make experiments to elucidate these questions at an early date.

The influence of black epithelium on white skin is shown where the two join; the skin becomes black. Carnot observed this fact as far as it could be recognized by the naked eye. That it does not depend upon a transfer of pigment, but is due to an emigration of the black epithelial cells into the white epithelium, I have proved by experiments and by microscopic examinations. It is well known that normal epithelium can fill a defect in the skin and that connective tissue can organize inorganic substances, but no analogy can be found for the infiltration of one kind of living epithelium by another. There is no visible sign of degeneration of the cells in the neighborhood of the advancing pigmented epithelium, and yet the white is easily supplanted by typical black epithelium with well developed chromatophores. This process is observed in every case; it may begin as early as ten days after transplantation, or it may be delayed for four weeks.

These experiments throw much light on the origin of skin pigment. This subject has a theoretical as well as a practical bearing, as excessive pigment is found in nævi, Addison's disease, erythema solare, and other conditions. I shall not enter into an extended consideration of the abundant literature on this subject, but will merely refer to some of the more important views.

Langhans and Quincke cited the local changes occurring after hemorrhages in animals; they observed pigment inside and outside of the epithelial cells, which had evidently been derived from the blood. These investigations probably determined the line of thought of those who afterward gave their attention to the question of the origin of the skin pigment. They leaned toward the belief that it was derived from the coloring matter of the blood. As there are no blood-vessels in the epidermis they thought this pigment must be carried to the epithelium by cells from the underlying tissues. This hypothesis once recognized as a self-evident fact, it was easy to give an explanation of the microscopic findings. They found cells in the epidermis, and similar cells containing pigment granules in the cutis. This observation was relied upon as the sole support of the theory that the chromatophores in the epithelium were only the migrated pigment bodies found in the cutis. This hypothesis was regarded as a proven fact by Riehl, Aeby, and Karg; Koelliker cautiously adopted the same view. Some of these writers think the chromatophores are migrated leucocytes. Karg compares them with fibroblasts, and Ehrmann regards them as cells *sui generis*, naming them melanoblasts. These, he thinks, project from the cutis and convey the pigment, which is transformed hemoglobin, to the epithelium.

The credit of having first observed pigment in the epithelial cells of the larvæ of the Batrachiæ before it is visible in other structures is due to Professor Kodis, of St. Louis. Jarisch found pigment in the epithelial cells of hair follicles, but not in the cutis, from which he concludes that pigment could not be carried from the cutis into the epithelium. He correctly observed that the pigment cells in the cutis differ from those in the epithelium. Schwalbe made similar observations, noting that in animals with a new growth of hair the pigment appears first in the epithelium and later in the cutis.

It is not generally accepted that the pigment of the skin has its origin in the metabolism of epithelial cells. Some light is thrown on this subject by the different chemical composition of skin pigment and hemoglobin. Nencky found that melanin contains much sulphur and no iron, while Abel and Davis observed the same relative differences in the composition of the skin pigment of the negro. Hemoglobin, on the other hand, contains much iron and comparatively little sulphur.

My experiments show that white and pigmented epithelial cells live on the same tissue, yet one produces pigment and the other does not. We do not know what food is required for its production, but nothing so far shows that hemoglobin is a necessary antecedent. Taking all these facts together, it is clearly shown that the pigment of the skin has its origin in metabolic changes in the epithelial cells alone. Nothing could be advanced that is more conclusive in support of this, than that white epithelium transplanted to connective tissue that had previously nourished black epithelium never develops pigment, though in one case the graft was maintained four and one-half weeks.

When black epithelium is grafted on tissue that has nourished white epithelium it remains black, while at the same time the upper layers are being constantly thrown off, thus necessitating a renewal of the pigment. After a time the new connective tissue beneath these pigmented grafts, which had previously nourished only white skin, is seen to contain pigment granules surrounding the connective tissue nuclei. Only occasionally do we find a resemblance to the spider-shaped chromatophores of epithelial cells. As these bodies had not previously existed in the tissues, their origin must in some way be accounted for by the presence of the pigmented graft. At present no explanation can be given of this phenomenon; they can hardly be derived from adhering tissue, as it is possible to remove epithelium without any connective tissue, or if any adheres the layer is so thin that it shows no signs of regeneration.

Transplanted black epithelium will infiltrate neighboring white epithelium. As the black epithelium grows over the connective tissue which had formerly nourished white epithelium there is at first no pigment in the cutis and no chromatophores. The pigment production in the outer layers of the cutis is, under the circumstances, a secondary process. Therefore, this is a case where black epithelium grows over connective tissue which was originally unpigmented. Nevertheless, the black epithelium does advance, and remains permanently black over the original white cutis.

The same process takes place when black epithelium is regenerating over connective tissue from which white skin had been removed; this is shown if a point is chosen where black and white epithelium meet. A small portion of black skin and a much larger one of white are cut away. (This also gave an opportunity for observing how black epithelium was formed during regeneration in skin that had not been transplanted, a question concerning which no detailed investigations have been published.) The experiments all gave similar results; the pigment in the regenerating epithelium was laid out in a regular way, and it was never carried from the connective tissue to the epithelium. In the regenerating epithelium at a certain stage of the process chromatophores appeared in the lower layers showing an ameboid appearance. No such chromatophores are to be seen in the cutis. Then the pigment around the nuclei increases from the deeper layers, and that in the cutis increases. The chromatophores become darker and lose their ameboid appearance. Pigment bodies in the cutis play no rôle in this process. While regeneration is going on there is an increase of mitoses in the lower layers of epithelial cells near the wound. I have never under these circumstances observed any in the cutis.

During regeneration the chromatophores in the neighborhood of the wound show mitoses in the epithelium, but I have never observed mitotic division of bodies in the cutis, which resemble the chromatophores. There is therefore a resemblance between chromatophores and ordinary epithelial cells. Projections are seldom seen on chromatophores during mitotic division. They then present a rounded body in which the pigment surrounds, but is not in contact with, the nucleus. In only two instances have I seen the projections preserved during mitosis.

That pigment originates in the epithelium is shown by its localization in normal skin. In guinea-pigs the glands attached to hairs remain free from pigment. If the latter is brought by the connective tissue cells, is it not surprising that the latter lose their function

as they approach the epithelial cells composing the glands attached to the hairs? The decrease in the quantity of pigment is also found in the upper layers where the Malpighian layer changes to the granular layer. According to the old theory there should be cells which appear at this point loaded with pigment, and carry it into the connective tissue.

No chromatophores are found in this situation, neither is there a layer of migrating cells that could gather the pigment and carry it away. A more probable explanation is that chemical processes in the deeper layers of the epithelium lead to the production of the pigment; again, chemical action apparently leads to the production of pigment, particularly in those places where new chemical substances such as keratin, keratohyalin, and eleidin are formed. In the hair glands of the guinea-pig the chemical processes probably differ from those in the epithelial cells. In these glands correspondingly no pigment is produced.

If an additional argument were wanted in support of the view that pigment is formed by the epithelial cells and not brought to them by the underlying tissue, it would be furnished by the polar arrangement of the granules, they being always found at the side of the nucleus. If the pigment were derived from a simple deposition from below, we should expect a much more uniform distribution. Those cells which meet with some obstacle in their migration, and which consequently develop an excessive pigmentation at the margin of the nucleus, furnish still another argument against the belief that epithelial pigment is derived from the underlying connective tissue. All the accurate experimental work so far points conclusively to the view that skin pigment is a product of the metabolic activity of the epithelial cell, and that there is an essential difference in the structure and functions of white and pigmented epithelium.

IMPLANTATION OF FOREIGN BODIES IN THE MAXILLÆ.

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These preliminary notes have for their central idea bone regeneration. The practical side of the subject deals with implantation, in the processes of the maxillæ, of substitutes for the roots of teeth that have been lost by decay, trauma, or pyorrhea alveolaris. Such substitutes do not include ivory, the roots of live and of desiccated teeth, all of which are prone to resorption.

The cancellous portion of the maxilla, sustaining the alveoli of the tooth roots, has the power of quick repair because of its numerous marrow cavities and great vascularity. In this respect the cancellous portion of the maxilla excels all other bony structures.

The cavity left by a prematurely extracted deciduous tooth is within a few weeks covered by callus, which later develops into dense bone, covering the permanent tooth. So hard is it, that the eruption of the permanent tooth is sometimes retarded or entirely prevented. The cavity of a permanent tooth is first filled with dense fibrous tissue, and later with bone. At the same time the lateral walls of the alveolus are absorbed, and a smooth, hard ridge is formed, which is capable of bearing nearly continuous pressure from a substitute denture.

In the correction of irregularities of the teeth and of malformation of the jaws, the entire alveolar process may be moved or remolded, by means of resorption at one point and building at another. Regenerative activity is marked, even after extensive necrosis.

Atkinson[37] claimed to have reproduced in a necrotic jaw, without deformity, alveolar plates containing sockets of the inferior teeth extending to the second molar on each side. On completion of the work, all the teeth were retained standing in well-formed sockets. He claims to have done similar operations repeatedly.

Sharp[35] reported an extensive necrosis of the lower jaw. Fully two-thirds of the alveolar process was lost. Though the report is very imperfect, the statement, "To my agreeable surprise, I found the entire set of excellent teeth perfectly fast and in their proper places," leads to the only possible conclusion, that new alveolar walls had been supplied.

Schulze[34] reports the case of a scrofulous seven-year-old girl with necrosis and separation of the entire process of the lower jaw. While Schulze discredits himself by the statement that new tooth germs were also created—a phenomenon as impossible as that a new head could grow on a decapitated ox—the report that the maxillary process regenerated to normal height and fulness is probably accurate.

How will this bone structure behave to pressure or a mechanical irritant? Will it develop a fibrous matrix for the substitute tooth, or will it slough? This takes us into the field of bone resorption and regeneration, bone inflammation and its sequels. I shall not deal with the whole literature of this subject, for the complexity of bone metamorphosis has a century of painstaking, accurate work and not a little empty speculating behind it. From our accumulated knowledge we may assume that bone, periosteum, cartilage, and marrow, originating in the great mesoderm, all belong to the white fibrous tissues. Each cell performs the function needful for the building or continued integrity of the contiguous region. The functions of connective tissue cells are interchangeable: thus marrow cells[9] may become osteoclasts. Kölliker,[33] in describing myeloplaxes, because of their assumed function, termed them "osteoklasts" (bone-breakers). Rustizky[9] has repeatedly seen osteoclasts developed by the union of marrow cells. He considers them conglomerates. Osteoblasts may develop from osteoclasts, or, as Stieda[31] holds, from the cell elements of connective tissue penetrating cartilage cells. Again, according to Maas,[18] their formation involves a modification of cartilage cells.

Inflammation or metamorphosis attending new growth may reduce all connective tissues to embryonal elements, from which state they either completely degenerate, as in necrosis, or assume renewed or specialized activity. Muller established this general law in 1858, Ranvier acquiesced in 1865, and Heitzmann[5] pronounced it a universal law for all tissues in 1873. Stricker illustrated this law in his study of inflammation.

The theory of the exclusive activity of periosteal cells in new bone formation has found noted adherents. Maas[18] maintains that by withholding periosteal proliferation bone formation is checked. Holes drilled into the shaft of tibias of rabbits and covered with platinum plates, thus excluding periosteal proliferation, gave negative results.

Hilty[28] made the same experiments with opposite results. He bored a hole deep into the tibia of a rabbit and introduced a silver

wire. New bone formed about the wire, which he ascribed to the activity of the marrow only. The age of the rabbit is not given.

Bidder[12] in experiments with nine rabbits apparently followed the method of Hilty. He used old and young animals and bored through the epiphyses from the articular facets. His conclusion is: "Marrow and connective tissue of the epiphyses of mature animals do not possess the power of forming new bone. In the region of enchondral bone substance, therefore, rupture of continuity or defects will not be filled with bone arising from the tissue; only marrow and fibrous tissue will develop. In young animals meager bone formation will follow trauma, especially if the cavities be continuously irritated by a foreign substance."

Bidder's failure to stimulate osteogenetic formation in mature animals is found in the fact that the articular parts of the epiphyses are, from their proximity to the joints, ill suited for cell proliferation. This is pointed out by Humphrey[16] in his criticism of Ogston's[22] article on development of bone in the epiphyses of long bones. He further notes that the processes of ossification are provided for, at a distance from the joints, through the medium of the epiphysial lines. Moreover, the articular cartilages are quite extra-vascular, thus making their nutritional condition incompatible with active function.

Hein[14] holds that while traumatic periostitis hastens bone formation, irritation of bone marrow is of as great, if not of more, importance in new bone formation. He has found callus formed in the deeper structure before it was noticeable in the periphery. Having in mind the experiments of Bidder, Litty, and others, Hein points out that animals vary greatly in adaptability for these experiments; that rabbits are unsuited for them, while experiments on pigeons give good results.

My third proposition agrees with Hein's conclusion: While periosteum is most effective in bone development, all other connective tissues, when irritated, and forming plastic exudates, are capable of producing bone.

An interesting example of the above is found in the development of true laminated bone formation in an irritated dental pulp and in connective tissue tumors. The three principles laid down find ample confirmation in my histological work.

My experiments were made on dogs, six in number, kept in kennels at the Chicago Veterinary College. An impression was taken of that portion of the dog's mouth to be operated upon and a silver appliance made, consisting of two caps, one intended for the cuspid,

which would remain intact, the other fitting the tooth to be removed and later to be occupied by the substitute. These two caps were held in relative position by means of a heavy wire soldered to both of them. The next day the animal was etherized and the upper left first premolar was extracted. By means of a dental engine and a reamer, constructed for that purpose, the socket was freely enlarged so as to easily retain the artificial root and cap made of lead. The lead was shaped to conform as nearly as possible to the curve described by the extracted tooth; in place of a sharp apex, however, its end was bulbous. To further favor retention, a shallow groove encircled the body of the substitute at its middle.

The alveolus having been enlarged the prepared substitute was inserted, the silver cap filled with cement and adjusted to its place. In a few minutes the cement had crystallized and the dog was sent to his kennel.

The only asepsis observed in this work was that of instruments and that of the substitute. Carbolized water was used to clear out the enlarged socket; oakum was packed around the parts to be operated upon. Greater precautions were not necessary, as all the wounds healed by first intention.

This procedure prevailed with each of the animals held for my purpose.

Experiment 1.—Bulldog, aged six years. A week after the operation, broke the appliance. The experiment at first promised good results, but owing to the accident the only information gained was the notably rapid healing of the wound and the development of dense fibrous tissue encapsulating the root, as was demonstrated by exploration.

Experiment 2.—Skye terrier, full-grown. The process in this case was so small that the walls left standing were very thin and low. The animal had a distemper, and the remaining osseous structure became necrotic and sloughed away. After three weeks the appliance was taken off and the case declared a failure.

Experiment 3.—Terrier, full-grown. Lost the appliance through some unknown cause a few days after it was placed in position. The wound was allowed to heal uninterruptedly in order to later demonstrate the filling of the aveolus with new bone, though the socket was deprived of its periosteum.

Experiment 4.—Removed the silver cap three weeks after the operation. Tooth remained firmly in position until the animal was killed and a portion of the jaw removed to make sections.

Experiment 5.—A mongrel, full-grown. The occlusion of cap

with lower teeth was imperfect; in consequence there was motion in the substitute. The excessive irritation hindered healthy granulation and the tissue surrounding the socket broke down.

Experiment 6.—Terrier, young. Retained the cap and substitute for the full period of six weeks, and the tooth was removed only after applying some tension and torsion; it was firmly embedded in connective tissue.

This preliminary work taught that dogs should be kept in kennels for a long period after operation, the successful termination of which requires repair of tissues, which under the best conditions progress slowly. To keep such an animal in good condition for experimental work requires that it may have normal exercise.

Caps such as I made in this work are not advisable, since they are too apt to become loosened by violence; and again, food remnants are prone to collect about them, giving rise to resorption and sloughing. In subsequent work I shall use headless, blunt-pointed, large threaded screws, silver- or gold-plated, fitting firmly into sockets prepared for them.

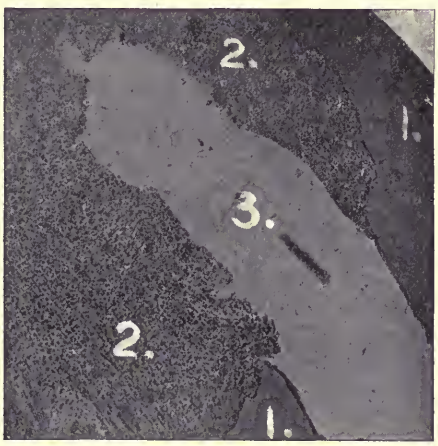
Since this work was completed I found an article by Zamensky, of Moscow, which was read before the Medical Congress in that city in 1891. He describes experiments on dogs in which he used teeth with porcelain roots. He claims that in two cases teeth so implanted became absolutely firm in twelve days; in one month the dog could eat any kind of food. They were tested by Professors Sklifosoffsky and A. B. Voght, neither of whom could with two fingers shake or remove the teeth. In a third case the dog gnawed at his chain before the tooth was firmly fixed and the ultimate result was not so good. He made no microscopical investigations.

In my own histological work, decalcification of the portions of jaws was effected by chromic acid and nitric acid; staining was done with safranine, Bismarck brown, aniline blue-black, hematoxylin, and ferrocyanide of potassium. Some of the most brilliant and rapid Bismarck brown and safranine stains were procured by immersing sections in aniline oil in which the pigment had been previously dissolved. The sections transferred from spirit were placed in a thin watch-glass and heated over a Bunsen burner. They were then placed on a slide, loose coloring matter washed away with clove oil, and mounted in balsam.

Of the ferrocyanide of potassium stain I shall have more to say in the future. The picture presented in the mounted sections, arranged in series corresponding with the period of time between

operation and death, leaves the impression of rapid resorption and new bone growth within the blood-clot. At the margin of the cavity occupied by the lead root granulation had advanced.

Billroth[1] and Cohnheim say that these cells are not the product of proliferating connective tissue, but are an accumulation of wandering white blood-corpuscles escaped from the vessels. Fetz considers them to be embryo plastic cells which differ from the connective and medullary tissues, but are of a character analogous to that met in fetal life. Fetz further believes them to be the result of "direct genesis," a rather vague way of putting it. Had he held them to be embryonic cells, wandering leucocytes, or medullary cells, connective tissue cells returning to their primitive state, to be again specialized for new function, or to be reabsorbed, I would deem his point well taken.



1, 1, Dentine; 2, 2, inflammatory resorption area, growing from periosteum; 3, cleft from accidental fracture of root of tooth.

The accompanying figure shows that osteoclasts are not essential in the resorption of bone. The slide from which it was taken shows inflammation and thickening of the periosteum (2). Normal dentine is shown (1), and a tooth root (3) accidentally broken in making an excavation for a socket. Cells such as we find in inflammation have replaced dental structures, which have been reabsorbed. In the series of sections from which this was taken no osteoclasts were found.

Nearly all of the scores of slides showed well developed bone trabeculæ, surrounded by osteoblasts frequently in layers two and

three deep. This new growth was as distinct in the deeper layers, where there was no periosteum, as it was near the margin, near that membrane. The future of this new bone, that now appears so promising, will be determined later. That it may be stimulated by the irritation of a sterile foreign body, and form a connective tissue socket for a substitute tooth, does not seem improbable. The process closely resembles an osteosclerosis consequent upon and following an osteitis.

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103 STATE STREET.

THE DIFFERENTIATION OF THE CHRONIC FORMS OF RHEUMATISM.[1]

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The more rheumatic diseases are differentiated and understood, the more successful will be their management. Rheumatism has been a name loosely used for pain in almost any part of the body.

The diagnosis of rheumatism must be frequently made by exclusion. Like syphilis it mimics many other diseases. It has a purpuric eruption in common with true purpura, arthritis in common with all the pyemic diseases, endocarditis in common with nearly all the infections, and so on. The event often establishes the diagnosis, but only by a thorough study of the extrinsic causes of rheumatic symptoms can a diagnosis of rheumatism be made by exclusion.

The first differentiation that must be made is between rheumatism and non-rheumatic inflammation of the peripheral nerves. Thus it is almost a daily experience to find cases of typical neuritis which have been held for months or years to be cases of rheumatism. The diagnosis of neuritis depends upon the recollection of a few simple facts of anatomy and physiology and their application to diagnosis. When a nerve is inflamed it gives tenderness on pressure along its trunk; its functions are impaired so that the deep reflexes, such as the patellar, may be lost; and there are disturbances of sensation over the area of distribution of the terminal fibers, such as numbness and tingling of the extremities, and tenderness on pressure over the muscles to which the nerves are distributed. Witness the tenderness on grasping the calf muscles in neuritis in the lower extremities. This test of the structures involved is a general guide in the diagnosis of peripheral neuritis.

Theoretically this differential diagnosis should be easy, but practically it is only made after careful study. A chronic painful affection of the shoulder is often a troublesome problem. When such a case is seen early and observed with attention, or when it is seen late when muscular atrophy is marked, the diagnosis is not so difficult as it is in an intermediate stage of four or five weeks. Neuritis may affect the peripheral nerves in a most eccentric manner, so that typical distribution cannot always be looked for, though in a general way distribution is an important element in diagnosis.

Not a great many years ago diseases of the peripheral nerves were little thought of. Since they have been recognized they have

[1] A paper read before the New York State Medical Society, Albany, N. Y., Feb. 2, 1899.

attracted a good deal of attention. Physicians formerly thought of most pains as rheumatism or gout; the temptation is now to explain many painful conditions by presupposing the existence of neuritis.

Neuritis is indeed a common cause of unilateral pain in the arm or in the leg, generally the result of traumatism or constitutional disorder, as alcoholism, syphilis, or of the gouty or rheumatic diathesis. It is characterized by its fixedness, its distribution to the territory of particular nerves by the accompanying tenderness of the nerve trunk, absence of fever, and by the pain being worse at night. In addition to this other functions of the nerve may be interfered with. In diagnosis a good deal must depend upon the distribution of the symptoms as to whether or not they correspond to the anatomical distribution of a particular nerve, and upon the application of certain tests. Pressure upon the nerve trunk at the point where it is inflamed gives pain at the point of pressure, and increases the pain which previously existed in the area of distribution of the nerve. Numbness and tingling are frequently present over the areas of distribution of the terminal fibers of the nerves. Hyperesthesia may be very marked, and paralysis may be present when the nerve affected is a nerve of motion as well as of sensation. Muscular tenderness, as a symptom of neuritis, is of importance. It is more apt to be found in the beginning of acute cases, but may persist throughout the course of a chronic case. The low grade local neuritis which we have in mind is essentially a chronic condition. Its origin may be obscure, or from some slight injury.

The next differentiation of importance is from the various forms of arthritis in which the rheumatic poison is not the active cause.

Arthritis deformans is a condition of some rarity, but nearly every physician has seen true cases in its extreme development. It involves the ends of the bones in a proliferation whereby motions of the joints are finally lost. It is important to distinguish this disease in its early stages from chronic rheumatism, more particularly on account of the prognosis. This rheumatoid arthritis, when carefully studied, has all the characteristics of a nutritional disorder dependent upon disturbed functions of the nerves that control nutrition. This is well seen in the marked atrophy of the muscles, and in the changes that take place in the joints without the existence of a corresponding amount of inflammation or pain; also in the fact of its occurrence more frequently in women, whose nervous system is less stable than that of men, and its evident connection in many cases with shock and nervous disorder.

From chronic gout the differentiation is easily made by the presence or absence of the gouty deposits.

A very troublesome type is the arthritis that follows infection with the gonococcus. This is a complicated rheumatism and seems to me to arise from the accidental coincidence of a mild attack of articular rheumatism and infection by this germ, the original rheumatism running into the gonorrheal type. One case in particular I remember, in which there was a mild rheumatism in progress for several weeks before infection took place. The arthritic symptoms then became more violent and persisted as a very troublesome case of this most intractable disease.

Acute articular rheumatism is a systemic disease with its usual manifestations in the joints, but it is abundantly proved that rheumatism may manifest itself most injuriously in other directions. The acute cases succumb sometimes to hyperpyrexia or to the complica tions which are common to other continued fevers. True chronic rheumatism, like suppressed gout, shows itself in unexpected directions, or in frequently repeated attacks of pain and stiffness in joints that do not show marked changes from inflammation. The differentiation of chronic rheumatism is therefore its separation from the other forms of joint disease, from other painful disorders of the extremities, and from other diatheses. Rheumatism may, or may not, predispose to rheumatoid arthritis, to gonorrheal rheumatism, to injuries from gout, and to chronic synovitis, but when these things are once firmly established and the rheumatism itself has spent its force we have to deal with other things beside chronic rheumatism. With neuritis it is a little different. It would seem that a certain number of cases were of rheumatic origin, but even here during the slow period of regeneration that follows the acute inflammation the antirheumatic treatment is of doubtful value.

A careful study of the question of chronic rheumatism leads to the somewhat unexpected result that in its truest sense chronic rheumatism is not manifest in distorted and deformed joints. Rheumatism is rather conceived as a disease founded upon the circulation in the blood of some poisonous element that has the character of an infection. Now in the great majority of cases this infection expends itself in an acute prolonged rheumatic fever in which the joints present the characteristic lesions. When a person recovers from acute rheumatism, the recovery is usually complete as far as the rheumatic infection is concerned. There may remain damaged joints and often anemic symptoms. However prolonged inflammatory rheumatism may be, it can never be said to become chronic; at most it is subject to numerous recurrences.

There is a form of chronic rheumatic poisoning, most frequently seen in children, in which the rheumatic poison does seem to be pres-

ent as a permanent element, but curiously enough in these cases the articular element is not specially prominent. There are two types—a severe fatal type and a type in which the poison does not seem to be so virulent. In the latter the rheumatic poisoning manifests itself in chorea, skin eruptions, a tendency to repeated attacks of tonsillitis, neuritis, and anemia. In the former the disease runs a fatal course, with chorea, pleurisy, endocarditis, pericarditis, and perhaps a terminal nephritis. Repeated manifestations of a mild amount of chronic rheumatism may give pain and stiffness without permanent changes in the joints, but it is never a disease effecting profound alterations in shape and size of the ends of the bones and cartilages. These conditions are something different from rheumatism; they are examples of chronic arthritis. The rheumatic arthritis involves exclusively the fibrous structures, and when a joint is stiff after rheumatism there is a fibrous union very different from the bony ankylosis seen in other forms of arthritis. True rheumatism is undoubtedly much influenced by the salicylate treatment, while the so-called chronic rheumatism, that has nothing to do with an active rheumatic poison, is not so influenced.

The constitutional form of chronic rheumatism might be termed also the rheumatic diathesis without permanent lesions. This is easy to appreciate when rheumatism is looked upon as a constitutional disorder, of which the local tissue derangements are a manifestation. There are adults also who are hardly ever free from rheumatic manifestations, who still do not develop the chronic marked joint changes that are ordinarily called chronic rheumatism. Such persons do most certainly have typical rheumatism at times, but are hardly ever free for any length of time from some condition, such as a neuritis, a tonsillitis, a neuralgia, a periostitis, or derangements of the gastrointestinal tract, of such a nature as to suggest a specific cause. This condition in rheumatism is parallel to and not always easily distinguished from the gouty dyscrasia, but there is a difference in that if such individuals do develop marked arthritic trouble they develop typical articular rheumatism and not gout. They differ, moreover, in the final outcome in that the rheumatic diathesis does not lead to arterial degeneration as a primary result, nor are any of the manifestations directly traceable to indiscretions of diet or to a gouty heredity. It would seem that this is a chronic condition that may be termed rheumatic, and should be classed as a form of chronic rheumatism, and that this condition is analogous to the gouty diathesis of gout, but that it is rheumatic in its nature.

30 WEST 36TH ST.

REMARKS ON THE TREATMENT OF NEURASTHENIA.[1]

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For the production of neurasthenia, as for the production of nearly all disease, two conditions are indispensable: (1) a noxious agent, and (2) a relative vulnerability of the organism or of some part of it. In different diseases and in different individuals the comparative importance of these two etiologic factors varies enormously. Their proportionate importance might be stated in the form of a fraction and called the *etiologic index*, with the external influence for a numerator and the individual susceptibility for a denominator. This index may present a ratio anywhere between a fraction with infinity for a numerator and unity for a denominator, and the other extreme — one for a numerator and infinity for a denominator. To illustrate: A certain force applied in a certain way will invariably fracture the human tibia; a certain amount of hydrocyanic acid introduced into the circulation is invariably fatal. In such a case the etiology is practically all agent, the vulnerability being scarcely recognized. I once saw a man stumble and fall on a level pavement, and in the fall break his leg; I have seen a woman have a violent convulsion from a simple request to do what she did not wish to do. In these examples the morbific agent was practically *nil*, the personal vulnerability, susceptibility, or instability everything. Ten thousand men might fall as this one did and never break a bone; ten thousand women might receive a somewhat distasteful request without going into convulsions over it.

Now, to the careful observer, the genesis of neurasthenia reveals these two extremes — and every gradation between them. One case may be likened to the fracture of a healthy bone; an individual with a vigorous and resistant nervous system subjects it to a tremendous and prolonged strain, and it breaks. The other extreme is like the case of fragilitas ossium just mentioned; a man receives a relatively slight mental shock, or some trivial ictus plants a pathogenic impression or idea, but even this small cause is too much for the kind of nervous organization that he possesses, and it suddenly or little by little gives way.

"On the one hand, then, there is true nervous exhaustion; the overdrained, overstrained nervous system that needs principally rest and replenishing; the person worn by work and worry, eaten by

[1] Read at the forty-ninth annual meeting of the Illinois State Medical Society, May, 1898.

ambition or passion, prostrated by profound mental shock, who needs repose, diversion, nutrition. On the other hand, a nervous system, particularly a cerebral center, naturally imperfect in many respects, ever in a state of unstable equilibrium, easily thrown out of balance, producing effects out of all proportion to cause. This is the individual of neuropathic temperament, the victim of his cerebrum. He may be for years entirely normal so far as appearances go, and is not unlikely to be brilliant in some respects, but to be possessed of an imperative conception seems to be his fate. He is usually self-centered, hypersensitive, and wanting a perfect coordination of mental powers. These are the *zur Krankheit erwahlten* of Meynert, the chosen ones of functional nervous disease, who most severely tax the physician's wisdom and patience.

"A knowledge of these two classes of cases and a just discrimination in estimating the proportionate supremacy of one etiologic factor over the other—a power to read the etiologic index, if you please—is a *sine qua non* for the greatest attainable success in treating the disease, for it is at once apparent that different cases will need radically diverse treatment. The first calls for the rest cure in the widest sense of the term, and little more. We have to do with a state of nutrition and function which is produced by a sufficient cause, and which, under favorable circumstances, we expect to be temporary. With proper precautions hypnotics and sedatives may be given with a free hand. In the second class we are confronted with a condition the foundation of which may be, and generally is, as unalterable as the leopard's coat. Above all others these are the cases in which the individual is to be managed, and the disease, or at least the symptoms, neglected. To this class belong the neurasthenics whose trouble was started by a slight cause and continued to grow long after the cause ceased to exist. Such are laborers who have become permanently nervous after overlifting; such are most of the cases of the so-called traumatic neuroses and postoperative nervous states. Here careful investigation will bring to light a brooding of one kind or another, with the gradual development of a fixed idea that is generally subconscious—a veritable mental possession. These patients are to be vigilantly protected from hypnotics and stimulants. The treatment must be essentially and continuously mental. The mind may be reached from many points and along numerous channels, but the objective point must ever be the same and always in view. Oftentimes these real unfortunates must be trained anew in ways of life and habits of thought. Instead of rest they should be given occupation, and instead of freedom from care

gradually increasing responsibility; instead of drugs, personal influence and support. The development of self-discipline, self-control, hope, and confidence should be the constant aim, to the neglect, if need be, of dyspepsia, constipation, vertigo, or insomnia. A wide grasp of the subject, a buoyant courage, a ready tact—these, and not a prolific formulary, make the effective armamentarium.

"As the personal equation is so prominent a factor in treatment, the medical interviews should not be too infrequent. The ordinary experience is that after seeing his physician the patient feels relieved and encouraged—as many of them express it, 'lighter' in mind and body. But this exhilaration and improved tone are not enduring, and the patient needs anew his plunge into the fountain of recuperation. Unless the medical adviser can be truly such a fountain he is not the ideal physician. For this reason, more than any other, the practitioner who is really an enthusiastic and persistent electrotherapeutist, hydrotherapeutist, or dietotherapeutist achieves brilliant results with his favorite treatment."[1]

A glance at the type of each extreme will, perhaps, make my meaning clearer.[2]

A lady, aged about 38 years, had been for almost two decades a constant and very intense worker at an intellectual pursuit, was obliged to carry considerable responsibility, and besides kept up a rather wide social connection. In addition to this she had for the last few years been subjected to great strain from personal and family infelicities. She finally "broke down," "went to pieces," and had most of the complaints that go with neurasthenia. Impaired concentration, ready tire, backache, constipation, insomnia, with audible pulse and hyperesthesia to noises, anorexia, irritability, mental depression, various aching and tender areas, indigestion and gastric fulness, pelvic distress when on the feet—these were the chiefest of her sufferings. She was given essentially the Weir Mitchell treatment—that is, she was isolated from family and friends, kept in bed, fed five or six times a day in increasing quantities, received every morning a "sheet rub," and on alternate days an hour of massage and electricity. She saw no letters, read nothing, heard no news, took no exercise, and was not allowed to talk.

Circumstances compelled me to limit the time of this treatment

[1] Slightly altered from the author's article on "Disorders of Sleep," in Hare's System of Therapeutics, vol. iv.

[2] I hope I may be pardoned if in what follows the personal element seems unduly prominent. There is no desire to obtrude the writer's particular ideas or methods, and certainly no wish to record the tolerably fortunate treatment of a few cases. To present specific examples appeared to be the best means of emphasizing what is believed to be a very important principle in the division and treatment of these multitudinous cases.

to five weeks, but the results were all and more than had been promised. The patient was enabled to resume her work, which she has continued ever since (ten years), although she has been called upon to endure much more than ever before.

A. B——, a man of 36 years, single, assistant professor in an eastern college, consulted me three years ago. He was of even temperament, not impressionable, never an extremist, neither sanguine nor the reverse, of good habits and average mental capacity. With limited opportunities, he had educated himself; was first a country school-teacher, then successively taught in and became principal of a town school. Not satisfied with this he aimed to be a university professor—a laudable endeavor, it must be acknowledged, when coupled with adequate intellect. In the present instance it was ill-advised. Either the patient's natural capacity or his already existing brain-fag would seem to have placed a lower limitation to his capabilities than that set by his ambition. In spite of this, his aspirations and industry kept on overtaxing his brain until the point of marked inefficiency was reached. All his mental processes were sluggish, his "reaction time" enormously increased, his work unsatisfactory to himself and to others. To fully restore his normal vigor and astuteness only prolonged rest was necessary. This was not practicable, but on a compromise plan of materially diminished hours of work, materially increased hours of sleep, cold baths, and a reasonable amount of outdoor exercise, he greatly improved and has remained in very good health. Of course, the rational thing for him to do would be to return to the humdrum but less exacting life of the village teacher.

Now to cite two or three examples of the other type, the neurotic type, the type of "possession," wherein an idea or conception, conscious or subconscious, is the all-important element. These are the cases that I particularly wish to emphasize, as their real nature is often unrecognized.

Mrs. B——, aged 38, married, the mother of healthy children, was referred to me September 23, 1896, by a well known gynecologist. Having been of previous good health, but of rather nervous disposition, she had begun, about a year before, to be troubled from the effects of a ruptured perineum. There was some pelvic discomfort and a dragging-down feeling when on the feet, and as the patient desired operation it was done some seven months before she was sent to me. The perineum was repaired, as well as the anterior wall of the vagina. Everything healed kindly, and there were no untoward symptoms of any kind except that the patient was rather

nervous, became somewhat anxious about her ultimate recovery, and was considerably impressed by the suffering and operating in the hospital, of which she saw and heard more or less. It is to be remarked in particular that the fact of these mental impressions was not especially noticed at the time, but was elicited by careful inquiry in subsequent conversations. For instance, it may be cited that a short time before leaving the hospital the patient was taken to the operating room for examination and told to get upon the table. Partly from fright and apprehension, partly from physical weakness, she seemed unable to do so promptly and so declared to the surgeon, who at once picked her up and laid her on the table. This simple procedure made a profound impression upon the mind of the woman, as she subsequently related to me. She had the *feeling* that something must be very much wrong if she, who was about to leave the hospital, had to be carefully lifted about. There seems to have been no distinct process of reasoning, but simply an impression "in mass," if the expression be allowable, that all was wrong and she a doomed creature. After this, although the operative conditions were perfectly satisfactory, she did not regain vigor and was taken to her home after three weeks, surgically all right, but only partially convalescent. She felt very weak, not to say prostrated, discouraged, and also became decidedly exigent in her calls upon her medical attendant. He, being a very busy man and considering her perfect recovery to be simply a matter of a few weeks' time, responded when it suited him. The husband took his cue at times from the doctor, at times from the patient, being by turns brusquely skeptical and unduly solicitous. To her fears and doubts, then, the patient had added what she considered dangerous neglect and rank injustice. Then came, by the kindly neighbors, harrowing tales of invalidism, fertile suggestions as to the nature of the trouble, and earnest counsel in support of this, that, and the other medical man. In due course came the doctors—one, two, and three. Of these, one calmly asserted that there was nothing in the world the matter with her, and the other two said that the whole trouble came from a tear in the cervix, and that she never could be well until this laceration should be closed. Is it a great wonder that she developed marked emotivity, great weakness in the legs, loss of appetite, dizziness, insomnia, palpitation, constipation, indigestion, incapacity for even the slightest occupation, lost her customary interest in home and family, and became seriously depressed? Finally came the inevitable Christian scientist and *almost* cured her. But the holy healer, for some reason which I cannot now

remember, lost her hold upon the patient, who quickly relapsed into her former state.

When brought to me she had, in addition to the above enumerated symptoms, well-pronounced agoraphobia and divers "imperative conceptions." She could not by any strength of resolution force herself to walk alone more than a block away from her home or to cross the street. She could not enter a street-car alone, and when she came down town with her husband to call upon me she made him leave the car before it entered the tunnel, as she declared she absolutely could not endure to go through it. To be the sole occupant of a sleeping apartment was veritable agony, and to open the eyes on awaking often required all her courage. The imperative ideas were of divers kinds. She could not see a carving-knife without the idea of suicide or murder obtruding itself, and she could not even think of the lake without an impulse to throw herself into it.

The results of physical examination were practically negative. Stigmata of hysteria were conspicuous by their absence, and vaginal examination by the surgeon who had operated (and by myself) revealed only a small unilateral tear in the cervix uteri. Muscular development was good, the color was fair, and there was no emaciation, although she had lost somewhat in weight.

A positive assurance of recovery was given, but certain conditions exacted. The patient had to promise absolute and unquestioning obedience and consent to complete separation from family and friends. She was put to bed and made to sleep for several nights by full doses of trional; she was given, besides, enough bromide to quiet her during the day, and after a few days strychnine and kola to make her feel stronger. In addition she had a "sheet rub" every morning, and almost from the beginning was given hourly calisthenics, beginning with a very few movements and rapidly increasing them in vigor and frequency. Above all, she saw her physician at short intervals. He was her educator, and frequent lessons were necessary for rapid progress. When she could not eat enough I sat by her and commanded, reasoned, persuaded, as tact indicated. I listened to her plaints and dispelled her fears, called attention to the disappearance of each symptom as it went, and explained why we could not fail. Most important of all, I got her to look forward instead of pondering the present and the past, to be occupied with each step in advance, and to take a pride in what she herself had accomplished. In other words, I aimed to induct a possession by the patient of the idea of progress and recovery, instead of that of hopeless debility.

This course of treatment had a superficial resemblance to the "rest cure." In fact, it was anything but that. The woman was isolated, not to prevent the wear and tear of company and conversation, but to put her under the thumb of her doctor. She was put to bed, not for physical repose and the conservation of every iota of energy, but simply to remove all occupation except that prescribed. She was given a soporific, not because she was dying for want of sleep, but to demonstrate to her satisfaction that she could sleep all night. Kola and strychnine were administered, not because her waning strength needed stimulants and tonics, but to give her a feeling of strength and buoyancy, for a feeling of well-being is the most powerful suggestion of all. Electricity was used, not to give needed exercise to relaxed muscles, but for its mental impression. Instead of uniform inactivity, frequent, gradually increasing action was the order of the day. At first simply flexion and extension of the extremities while lying down, done by the clock, and a prescribed number of times, was the extent of exercise. Then, while on the feet, stooping, bending, and squatting movements. (At this stage I often introduce the Whitely exerciser or light Indian clubs.) When she had done enough of this I took her out for a short walk, having prepared her for it by explaining that when she should be able to do so-and-so much indoors she would be able to walk a certain distance. We walked this distance. The next half day we increased it, and so on until we went about half a mile. Then I preceded her by half a block, and this distance of separation was increased until she walked around the block while I waited for her. After this she went out alone twice a day until she walked two or three miles at a time, when she was allowed to go home. She was in the hospital just two weeks, and left a transformed woman, although not absolutely well. She ate what other people ate and plenty of it, slept all night, had regained her natural cheerfulness and courage, showed not a trace of agoraphobia, assisted actively in the household work, and did not know she had a womb.

The subsequent history of this case is interesting, but I have given enough for my present purpose—that is, to indicate a treatment radically different from that pursued in the first two cases.

E. W——, 28 years of age, merchant, consulted me November 11, 1895. Two and a half years before he had contracted a venereal sore, probably syphilitic, and was almost immediately put upon full doses of iodide and mercury. His stomach had always been somewhat sensitive, and this disordered it completely; to use his own expression, he was "all knocked out." This continued into the

hot weather, when one day, while driving, he suddenly felt dizzy and prostrated, with palpitation. Becoming much frightened, he dismounted and hurried into a convenient store, drank a pint of whiskey, and was taken home. That evening he felt well, and the next morning started out as usual, but took a boy along, "in case anything should happen." In other words, he was more or less timid and apprehensive; and, in fact, a vertiginous attack did occur, with a feeling as if his heart had stopped beating. This alarmed him exceedingly, and he started for home in a street-car, but before he reached it "broke down entirely" and completed the distance in a cab. He was now a thoroughly scared man. All his symptoms became aggravated, and he consulted five physicians within a year. They differed in opinion and treatment, but agreed pretty well that he had had a heat-stroke. Finally, one doctor assured him that the whole trouble was syphilitic, and confidently began inunctions of mercury. On this treatment he improved somewhat, and it was continued at Hot Springs, Arkansas, during January and February, 1894. After this he attempted light work and kept at it for six weeks, when the "spells" of dizziness and palpitation returned and he quit work for good. In addition to the frankly nervous symptoms, he had a great deal of trouble with his stomach, and in the autumn of 1894 consulted one of the best and most eminent internal medicine men of Chicago. This physician gave him a careful examination, including a test breakfast, the results of which examination were entirely negative. Hence the patient was informed, in effect, that there was nothing the matter with him, that his various organs and functions were absolutely normal, and that therefore his sickness was all nonsense. Several other medical advisers expressed a like opinion. Later, the patient discovered pinworms in the stools, and he and the aforementioned eminent practitioner hailed them with delight as the cause of all the trouble; and, indeed, killing the ascarides of the rectum did have a beneficial effect. But soon all the symptoms, the attacks of faintness and dizziness, the palpitation, the capricious appetite, the depression and worry returned. Again he was put on active mercurial inunctions and large doses of potassium iodide. This immediately made him worse, as it aggravated the indigestion and added diarrhea to the already existing troubles. As a last resort all medicine was stopped except digestives, and the diet restricted to kumiss and one or two other easily digested articles. Still the patient did not improve, and in desperation he was taken to a neurologist—a good one—who wisely advised a prolonged stay in a good sanitarium or a trip abroad. For either

of these plans the sick man felt himself financially incapacitated, and I was appealed to.

I found a well nourished, robust young man of good color and general appearance, but nervous and depressed. His father had come with him, as agoraphobia was so pronounced that he could not be alone on the street. Without going into details, I may briefly say that the ordinary neurasthenic symptoms were present, including rapid fatigue, poor mental concentration, asthenopia, and seemingly impaired memory, but he complained particularly of stomach and head. He slept poorly and for many months had been sexually impotent.

The results of physical examination were entirely negative. I had to do with a plump and muscular individual who had been subjected to no strain, physical or mental, except the pangs of syphilophobia and the fear of sundry organic diseases, and who was suffering from the mental state elaborated upon these foundation conceptions. He had the symptoms that belong to neurasthenia, but he had not true nervous exhaustion. Manifestly the "rest cure," except as a means of mental drill, would be out of place in such a case. Instead of repose for an overtaxed brain, he needed to do vigorous and healthy thinking. He was not put in hospital nor to bed, but was given gradually increasing body and brain exercise. On the street he was first put ten feet in front of his companion; this was rapidly increased to a block, and after that he went out alone. He procured a pedometer, and by this the length of his walks was systematically augmented until he was doing six to ten miles a day. Besides, he had a certain amount of exercise with Indian clubs. From the beginning no strict rules of diet were allowed; he was simply given plain nourishing food, in rather small quantities, five times a day. Before breakfast a cold douche was given him, and at bedtime a cool or warm bath. At first I saw him nearly every day and administered a *strong* current of faradism, generally to the abdomen, occasionally to the side in the region of the heart, and a few times to the head. This was for its purely mental effect, as there was nothing in abdomen, thorax, or cranium that faradic electricity could affect *per se*. It will be seen that with plenty of exercise in divided doses, with two baths and five meals daily, with plenty of time for sleep and frequent visits to his doctor, the patient's time was pretty well occupied. That means that his mind was occupied also, and more than this, both body and mind were busy with the wholesome occupation of getting well. There lay the gist of the whole treatment, and progress was almost continuous. After a few

months, carnal desires reasserted themselves in positive fashion, and the patient discovered that he was perfectly virile, but the discovery was made at the price of a gonorrhea, which by its depressing influence somewhat delayed recovery. As soon as he felt pretty well, slept well, and could do his various tasks and exercises without fatigue, he was put to work; at first for a few hours, then half a day, and so on, until he was in full business activity. At the end of six months he was practically cured, but had occasional trifling complaints for perhaps six months more. Since then he has worked steadily, has married, and may be considered an unusually strong and healthy man. Of course, he is still of a nervous temperament and remains impressible, and consequently is more liable than another to become the prey of functional nervous disorder.

In September, 1895, I was asked by an eminent gynecologist to see Mrs. A——, aged 23 years. At 16 she had had typhoid fever, and since that time had suffered from dysmenorrhea. This monthly suffering gradually increased in severity and duration, and after several years took on as accompaniment pain radiating down the left leg, apparently along the course of the sciatic nerve. The periods of pain and soreness finally became so prolonged that there was no intermenstrual interval, and the "sciatica" grew to be an enduring disability. This naturally wore upon the patient, and her general health deteriorated in every way. She was operated upon, a cystic ovary being removed and a heavy, displaced uterus being anchored to the anterior wall.

Recovery from the operation seemed perfect in every respect; she left the hospital in five weeks and suffered less pain than for years. Three weeks after return to her home, while still rather weak and not quite sure of herself, she went out with her husband for a street-car ride. Apparently from no particular cause she fainted in the car, and although loss of consciousness was only momentary, she felt much prostrated and very considerably alarmed, and her husband carried her the short distance from the car to their home. After this she grew rapidly worse. The natural timidity about entering a street-car soon developed into positive agoraphobia; going into a car caused an unreasoning but veritable agony, and in a short time merely being on the street alone was perfectly unbearable. All preexisting symptoms became aggravated, and the patient grew exceedingly nervous. It was thought that a visit to her mother might set her right, but under the fomenting influence of maternal solicitude her fears, pains, disabilities, and general nervousness waxed apace.

When I saw the patient, five months after the operation, she was in a really pitiable condition. She was thin, pale, emotional, depressed, sleepless, and very despondent regarding her condition. She suffered a great deal of pelvic pain, and the so-called sciatica had become so bad that, with the general weakness, it confined her to bed or chair. Asthenopia was so advanced that she had given up reading entirely, and company made her so nervous that she could not endure the presence of even her dearest friend. Headache was almost constant. All along the spine, about the left hip and at places over the thigh, over the lower abdomen and in the vault of the vagina, there was marked tenderness. Without exception the sensitive points were inconstant in position—that is, they showed the rapid shifting that I described to this Society a year ago.[1] It was only with very great effort and considerable pain that the patient was able to walk across the room, going with small and careful steps and carrying the bad leg in a rigid and constrained way. The pelvic organs seemed to be in perfect condition.

It will be noted that without any extraneous reason, without any additional call on the mental or physical vitality, and with no more active determining agent than an ordinary fainting spell, this patient had rapidly developed one symptom after another until she had all those of severe neurasthenia, with some belonging to hysteria added. The entire symptom-complex had been built up by a succession, or rather a logical sequence, of mental impressions; of (mostly subconscious) imperative conceptions, one giving rise to another, the whole founded upon and made possible by an impressionable personality. It need scarcely be intimated that such a course of events, such a pathogenesis, is very different indeed from that of other cases superficially similar. Had there been a period of prolonged suppuration, or of non-suppurative inflammation with severe pain and deranging adhesions, had it been necessary for the patient when incompletely convalescent to assume heavy physical or mental burdens, the individual symptoms after a certain time might have been very like those from which our patient suffered, but the essential nature of the case would have been quite dissimilar and the fitting therapeusis correspondingly diverse. Clearly, the thing to do to cure this patient was, if possible, to develop an antagonistic set of imperative ideas that should overcome and supplant the others. Incidentally, of course, the physical welfare was to receive attention. With this end in view I advised complete isolation, massage, electricity, graduated exercises, and moral treatment, much

[1] MEDICINE, July, 1897.

along the lines already indicated. The plan met with the approval of her physician, and he undertook to execute it. She was put into a hospital, and the services of an excellent masseuse secured; the nurse gave electricity, and the doctor saw her about once a day.

I called upon the patient at the end of a week and found her much discouraged. At the end of the second week matters were no better, and investigation discovered the play of Hamlet with the rôle of Hamlet left out. The patient was getting every part of her treatment except the one vital component. Her doctor was an overworked man with many more imperative demands on his time. He would walk into her room, say an encouraging word or two, make light of her various aches, assure her that she was doing finely, and depart. Happily, he is a man as liberal-minded as he is efficient in his own special field, and when I expressed a desire to carry out the treatment myself, instant consent was given. I changed the routine not one whit, but for the next few days saw the patient two or three times daily. I learned to know intimately not only all her aches and pains, fears and anxieties, but also her ways of thinking and feeling, her susceptibilities and obtundities. I unraveled as nearly as lay in my power the *modus gerendi* of her disorder, and unearthed the feelings, impressions, and convictions that had influenced her. It goes without saying that an adequate understanding of the patient's mental state is a prerequisite of success, for, as before emphasized, it is the mental state that constitutes the *pièce de resistance* of the entire course of treatment. It was the mental state, then, that I proceeded to attack: First, by giving careful and serious attention to all the symptoms and to all the details of treatment. Second, by symptomatic treatment. As before intimated, the most potent means of mental impression is relief of distressing symptoms. Third, by giving her almost constant occupation. Fourth, by giving her an object to look forward to and keeping it very much in view. Fifth, by inspiring her with hope. This was not accomplished by making light of her sufferings, but by judicious explanations, by unostentatiously calling her attention to every improvement, and by teaching her to neglect minor ills and to look forward each day to some definite goal to be attained the next day. Sixth, by stimulating a healthy pride in her progress, and especially in that part of it accomplished by her own efforts. This last element, the pride of the patient, is a most potent aid and its enlistment generally an easy matter, for patients of this class are, as a rule, more or less self-centered and their appreciation of approbation is very high.

To return to the patient. She received no opium or chloral, but for some days had bromide in full doses, with a trional powder at bedtime, a strong faradic current from one to three times a day, as was necessary to relieve some of the pains, and sufficient strychnine, kola, and coca to act as a temporary "bracer." Once a day she had an hour's massage (half an hour at first), and at frequent intervals small amounts of easily digested and nutritious food. She was given a "sheet rub" each morning before breakfast. Over the most tender and painful points two or three blisters were applied. (The thermocautery is sometimes better.) For occupation (after a few days of absolute rest, but while the patient was still in bed) the lightest kind of callisthenics were put in at frequent intervals between the meals, bath, electricity, and massage. These movements were to be executed a stipulated number of times and at stated hours. They were increased in number, frequency, range, variety, and vigor as the patient was able, and gradually led up to stooping, bending, and squatting movements done out of bed. These in turn rapidly led to certain prescribed walks in the house, and these last to outdoor promenades. The first and second times she went out I accompanied her; the rest was easy.

Through all of this routine she was informed each day about what her task for the next day would be, and after a little time was allowed to look further forward; for instance, to the time when she should be allowed to sit up, to go out, to see her husband, and to go home, attaching to each of these hoped-for events certain conditions to be first fulfilled. In this way the patient was in a manner taken into partnership in the treatment and given her full share of credit for the results. Thus she came to look forward to her doctor's coming, not to inform him of a new ache or novel symptom and to beg for relief, but to report what she had accomplished and how well she had done it. Here was the birth of the new ideas and the healthier consciousness.

Improvement was prompt and continuous. After four weeks of this sort of education she walked two miles twice a day without fatigue, slept all night, ate plenty of good food and digested it, had lost her depression and nervousness, and was practically free from pain, except headache. It should be added that this headache resisted all treatment directed to its permanent removal until the lady became pregnant, when her general health improved and with it the cephalalgia. This improvement continued after the baby was born, and her recovery might then be looked upon as completed. But in a case of this character it is never to be forgotten that the

abnormal susceptibility remains, that one attack of nervous prostration prepares an easier way for another, and that consequently the patient is never to be regarded as definitely and permanently cured in the sense of being out of danger of relapse or recurrence.

I should like to cite one more case to illustrate the transition or mixed type of neurasthenia, which partakes of the two sorts already described and consequently calls for "mixed" treatment, a judicious combination of the two methods applicable to the extreme types.

H. N——, aged 27, an only daughter and single, was perfectly well until the age of 16, when she is said to have had malaria, for which large quantities of quinine were administered. After this, although no disease was evident, she did not perfectly recuperate, and was, in a general way, unable to do what other girls did. Still, she was well enough to attend school successfully, and when 20 years old entered the University of Michigan, where she followed the usual curriculum for three years. The last of these three years was a "perfect drag." Physical and mental inertia were marked, and there seemed to be a general lack of vitality. It was thought that a trip abroad might mend matters, and ten months was spent in Europe in the company of her mother. Instead of improving during this time she grew worse, and for the next three years passed gradually down the gentle incline leading to invalidism. In March, 1894, the eyes were examined by Dr. Geo. F. Fiske, who found some choroidoretinitis and thought from the appearance that it was probably due to nephritis. I am informed that three examinations of urine at this time were negative except for a very low percentage of urea, but that a fourth showed a faint trace of albumen.

Until about a year prior to consulting me there had been remarkably few particular or striking symptoms, except perhaps the ocular findings. Simple lack of vitality was the crying complaint. The least mental or physical exertion caused fatigue almost amounting to exhaustion. As would be expected, backache and limbache, unsatisfactory sleep, increased distress with menstruation, poor appetite, gastric discomfort, constipation, and a general feeling of helplessness and discouragement were not wanting. During the summer of 1896 the gastric distress and anorexia markedly increased and were soon followed by nausea and vomiting. These symptoms remained the most obtrusive ones for a year. In spite of all manner of treatment directed to the stomach and all varieties of dieting, scarcely a day elapsed without the stomach rejecting its contents, and most frequently the patient vomited many times a day,

apparently retaining nothing of what she ate. Added to the insuperable distaste for food, this hyperemesis produced its natural result. The young woman grew weaker and thinner, until her time was all passed in bed or on a couch, and she could see her friends for only a few minutes at a time.

The findings of my examination were meager. There was no evidence of dilatation, catarrh, ulcer, or cancer of the stomach, lungs and heart were normal, as were also the pelvic organs, and no neoplasm or trace of tuberculosis could be discovered. Malaria was excluded. The urine varied in quantity from forty-eight to ninety-six ounces for the twenty-four hours, in specific gravity from 1002 to 1005, and contained neither albumen, sugar, nor casts. The percentage of urea was from two-tenths to four-tenths of one per cent, and quantitative analysis by Dr. Wesener, of the Columbus Laboratory, found two grammes of aromatic sulphates for the twenty-four hours, the normal being about one gramme. The results of urinalysis indicated to my mind simply a low state of metabolism and a sluggish intestinal canal, although an earlier nephritis could scarcely be ruled out with certainty. I found the fundi oculorum normal.[1] Examination of the blood showed a very moderate degree of anemia, amply accounted for by the insufficient alimentation. A search for emotional instability, whimsical succession of symptoms, and hysterical stigmata was fruitless. Nevertheless, I thought I discovered an important mental element in the case. Very significant, in my opinion, was the fact elicited that food was rejected almost immediately after eating. This is exceptional in the emesis of organic stomach disease, and is the rule in neurotic vomiting. On closer inquiry I learned that originally the emptying of the stomach was almost voluntary and was accomplished to relieve the sense of fulness and discomfort that followed a meal. Too much weight cannot be given to this factor in the genesis of neurotic vomiting. I have observed it many times, and it affords an excellent index for treatment. Furthermore, it was not very difficult to trace the influence of two solicitous, timid, and rather somber-minded parents, as well as that of some rather injudicious medical advice, in begetting a state of cheerful resignation to the inevitable absence of good health.

What was to be done? Make the stomach (or rather the patient) retain a sufficiency of nutritious food, increase the activity of all the processes of nutrition, and develop a mental state becoming an active and healthy woman of her age. How was it done? By a combina-

[1] This finding has been confirmed by a competent oculist.

tion of mental and physical treatment. First, she was put into hospital and completely isolated from every one except doctor and nurses. Second, she was put on Mellin's food in water for forty-eight hours, with a positive assurance that it would not come up, with an emphatic prohibition from helping it to come up, and with a strong faradic current to the epigastrium whenever it seemed about to come up. This diet was rapidly increased in variety and amount until, after a couple of weeks, she was taking quite as much as an ordinary adult. Third, she received massage three times a week until able to take considerable active exercise, and for a time general faradization to exercise the muscles. Fourth, after about three weeks of treatment active exercise was begun in very small doses and gradually but steadily increased. Very little medicine was given; sometimes trional for a hypnotic, bromide when nervous, and some laxative all the time. The hospital treatment lasted two months, and during this time she vomited slightly once. At the beginning she weighed eighty-four and one-half pounds (in her clothing), and when she left the hospital her weight was one hundred and twelve pounds. At first she could walk about one block; at the end of two months she did four miles a day, or its equivalent on a wheel. In conclusion, it only seems necessary to say that every single element of this treatment except the isolation had been tried before with negative result, but the combination of education, alimentation, and rest had not been systematically carried out.

VENETIAN BUILDING.

SUBCUTANEOUS INJECTIONS OF SOLUTIONS OF GELATIN IN ANEURISM.

BY HAROLD N. MOYER, M.D., CHICAGO.

Little has been suggested of late in the medical treatment of aneurism. Medical aneurisms include the thoracic and abdominal varieties; aneurisms of the extremities are termed surgical, as they can usually be reached by operation. In the former variety, almost nothing that is distinctly new has been suggested in their treatment for many years. Moore's operation, first recommended in 1864, has given anything but brilliant results, though it has been modified in various ways. Some of the later cases in which the coiled wire is connected with a galvanic battery have given better results; the earlier cases were perhaps less favorable because of failures in asepsis.

In 1896, Dastre and Floresco[1] published their experiments on the effect of solutions of gelatin upon blood. They determined that the coagulating power of blood was increased by the addition of gelatin. This action was constant whether the solution was brought in contact with blood in an open vessel or injected into the blood-vessels of an animal. There was no antagonism between salt solutions and gelatin, the latter having no power to determine coagulation in their presence. There was an antagonism between peptone and similar substances and gelatin. Gelatin and peptone, in the proportion of one to three, neutralize each other.

A year later Camus and Gley[2] studied the same subject and came to the same conclusions, namely, that solutions of gelatin did increase the coagulability of the blood. They did not regard this as due to a specific action on the part of the gelatin, but to its acid reaction. The antagonism between propeptone and gelatin they attributed to the fact that the former is acid and the latter alkaline. Floresco,[3] in a later communication, maintained that gelatin had a specific action, predicating his view on the fact that injections of gelatin caused an increase in blood-pressure, while acid injections were followed by a fall.

In June, 1897, Lanceraux and Paulesco[4] discussed the treatment of aneurisms before the French Academy of Medicine. Their first patient was a man 50 years old, who had had malaria nine years before. He had aortitis *en plaques* and an aneurism of the arch of the aorta of three years' duration. Syphilis and arterial sclerosis were excluded. For six months he had suffered from right intercostal

neuralgia, and for a year a pulsating tumor had been noted to the right of the sternum. The second, third, and fourth costal cartilages were partly absorbed, and part of the sternum. There was no difference in the radial pulses. The patient could only lie on the right side. Every change of position was accompanied by coughing, hoarseness, and oppression. Of late there had been a rapid increase in the size of the aneurism.

January 20, 1897, the patient was given an injection of 250 cubic centimeters of a five-per-cent solution of gelatin. The following day the tumor was harder, and decreased in size for the next few days. Later it became soft and increased in volume.

February 10 a second injection of 150 cubic centimeters of a one-per-cent solution was given, which was followed by a shrinking of the tumor and a disappearance of the pain and chest symptoms. From this date until May 2 the patient received twelve injections. The tumor became much smaller and the pulsation ceased. The patient resumed his occupation. At the end of a year intercostal neuralgia returned, and the lower portions of the tumor became soft and pulsated. A single injection was sufficient to overcome these symptoms. The reporters state that the original tumor remained throughout hard and pulseless, but that these relapses were due to new enlargements of the vessel.

A second case was that of a man 48 years old, whose trouble began with a crackling in the chest and slight hemoptysis, followed by pain and oppression in the chest. The veins of the upper thorax were enlarged; there was distinct pulsation in the second right intercostal space, over which a systolic murmur was heard. Both carotid and radial pulses were alike. From May 20 to August 1 he received ten injections of 200 cubic centimeters of a two-per-cent solution of gelatin. The pulsation, murmur, and oppression disappeared. After two additional injections he was discharged cured.

A third case was a coachman 50 years old, whose trouble began with a feeling of numbness in the right arm, followed by pain and a loss of power. Outside of the scalenus muscle, under the right clavicle, a small, distinctly pulsating tumor was found. The right radial and axillary pulses were absent. From January 18, 1898, to April 9, 1898, he was given eleven injections of 200 cubic centimeters of two-per-cent gelatin solution. The first injection was followed by a hardening of the tumor; after the third a murmur was heard over the aneurism, which was not present before treatment was begun. In April the patient began to move about and the tumor increased in size, became soft, and pulsated. Two additional injec-

tions caused the pulsations to disappear, and the tumor again became hard. From May 1 to June 20 nine injections were given. July 5 a weak radial pulse was noticed for the first time; it disappeared, but returned after two additional injections. August 13 the patient left the hospital to resume his occupation.

Two cases with diffuse dilatation of the aorta were treated; one was given nine injections and the other two, but there was no improvement.

Lanceraux states that the formation of a distinct sac in which a coagulum can form is an essential condition in the success of the treatment. In such sacs there is a slowing of the circulation and a deposit of fibrin. This deposit at first fills the cavity; later it contracts, and the blood again finds its way between the coagulum and the vessel wall.

Boinet[7] reports a case of aneurism of the ascending aorta. The case was treated by the usual methods, without result. After gelatin injections, coagula developed in the deepest portions of the aneurism. Lung tuberculosis developed, and the patient died with well marked symptoms of compression of the ascending vena cava.

Barth reported the case of a woman 45 years of age, with an aneurism of the beginning of the arch, who received an injection three times a week, the strength being increased from one to two per cent. After the fifth injection the tumor was harder, the pulsations lessened, and the subjective conditions improved. The sixteenth injection was followed by severe pain at the place of injection, a temperature of 104° F., and the development of a large abscess. Two months after beginning treatment dyspnea set in and the patient died; during her last hours there were marked symptoms of anemia of the brain. The necropsy showed an aneurism the size of a child's head, at the beginning of the aorta. The sac was filled with clots easily separated from the wall; the innominate, with its branches, contained clots, those in the innominate being old and firm—that in the carotid was recent and soft.

Huchard[8] has used the injections in two cases: one with improvement and a disappearance of the tumor; in the other the injections were very painful.

The solutions employed by Lanceraux are made by dissolving four to five grammes of gelatin in 200 cubic centimeters of a seven-per-cent chloride of sodium solution, previously sterilized. The solutions are kept for several days at a temperature of 100° F. Those which become cloudy are rejected, as well as those which do not harden when cold.

Futcher[9] reported to the Johns Hopkins Hospital Medical Society four cases treated by this method. One case received six injections, two of two-per-cent and four of one-per-cent; the stronger solution was found to give considerable pain. The patient was apparently doing well, when a severe hemorrhage set in, ending in death. The autopsy showed a diffuse dilatation of the aorta associated with a saccular dilatation.

A second case had an aneurism of the thoracic aorta, with definite pulsation, murmurs, and intense pain in the lower part of the thorax. Twenty-eight injections were given. Pain and pulsations decreased, and there was a gain of nineteen pounds in weight. This was considered the most satisfactory of the four cases.

A third case was one of saccular abdominal aneurism, which received sixteen injections with no improvement.

A fourth case was one of diffuse dilatation of the arch in which twenty-one injections were given. The outcome in the case is not stated. A marked increase in the coagulability of the blood was determined in this and in the second case.

The report of Lanceraux gave rise to an animated discussion before the French Academy, chiefly devoted to the irreconcilable differences in the therapeutic observations and experimental data. Bearing upon this are the observations of Welch, in discussing Futcher's report. He stated that the coagula in aneurism are not the same as ordinary clots forming outside the body, but are thrombi which consist largely of platelets. It is difficult to bring the formation of thrombi into relation with the coagulability of the blood. In rheumatism there is a quick coagulation time with little or no tendency to the formation of thrombi, while in typhoid there is this tendency associated with short coagulation time.

A review of the recent literature justifies the following conclusions:

1. Gelatin solutions are of some value in the treatment of saccular aneurisms.

2. They are of no value in diffuse enlargements of a vessel.

3. The remedy is used empirically, the experimental work affording little or no basis for the treatment.

4. Solutions not stronger than one per cent should be used.

5. Great care should be exercised in technique; failures in asepsis are easily made, as the solution is a good culture medium. The solutions should be kept in a brood oven to determine bacterial growth.

6. There may be dangers in the treatment, but the observations heretofore made are insufficient to indicate what they are.

7. Absolute rest in bed should be enjoined, and other remedies suitable for these cases may be given at the same time.

8. It is not a cure for aneurism, but may rank in the future as a treatment.

9. The method is worthy of more extended trial.

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BOOK REVIEWS.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY. Being an Annual Digest of Scientific Progress, Collected and Arranged with Critical Editorial Comment by Various Authors, under the General Editorial Charge of George M. Gould. Philadelphia: W. B. Saunders. 1899.

The Year-book of Medicine and Surgery for 1899 is fully equal, if not superior, to the three volumes which have preceded it. The Year-book has been fortunate in retaining nearly the same editors since it was first established. Increasing experience in the preparation of the matter is shown in this, the last, volume; there is, however, a diversity in the preparation of different sections, some being much better prepared than others. On the whole, the work is an admirable *résumé* of the literature of the year, and it would be impossible to find anything of considerable importance omitted from its pages. Editorial comment has received increasing recognition, and an examination of its pages only leads one to regret that more in this direction has not been done.

Many of the chapters are headed by a brief statement by the editor of what he deems the most important contribution in his department for the past year. We venture to review these statements of progress, as they have a general interest.

In general medicine the establishment of the Widal test as one of great practical usefulness is spoken of, almost to the exclusion of anything else.

In general surgery we are informed that, with two striking exceptions, surgical progress has not been revolutionary. One of these is the performance of total gastrectomy by Schlatter, and the other a plan for treating pulmonary tuberculosis by injecting nitrogen gas into the pleural sac. The active debate on the usefulness of the Murphy button is going on, with the tendency toward a general recognition of the value of this means of uniting the intestines. The forcible correction of the deformity in Pott's disease of the spine is spoken of. In addition, numerous subjects which are actively engaging the attention of investigators in this department are mentioned.

In obstetrics we are told that the most striking feature of the year has been in the microscopic study of fetal pathology and the pathology of the fetal appendages.

In pathology interest has largely centered during the past year in the study of cellular changes. Diseases whose anatomic changes were formerly passed over in silence have been found to possess a distinct pathology and to show cellular changes which, if not always specific, are yet significant. Important additions have been made to our knowledge of sarcomatous growths. Inflammation is still a battle-ground of conflicting views.

The introductory *résumé* of nervous and mental diseases shows that while no very striking fact has been brought out during the past year, there has been great activity all along the line, and that contributions of value have been made on almost every subject in neuropathology.

In orthopedic surgery we are informed that little original investigation has been made, and few new books have been published; what has been written is mostly in the line of research in diseases which have long since been recognized. The forcible correction of the deformity in Pott's disease is again considered in this department.

The past year in ophthalmology has been one of pruning rather than advance; it has been a year in which many mooted questions in this department have been settled.

In the article on otology an endeavor has been made to present succinctly the opinion of aurists upon local and medicinal treatment in chronic purulent otitis media, operations upon the ossicles, and the ultimate results of operations upon the mastoid, all of which possess great interest for all practitioners of medicine.

In the department of nose and larynx the year has been marked by a large amount of practical work along lines of former activity; while not producing great discoveries, many minor improvements in the technique of operations, as well as more definite indications in the use of remedies, have been developed.

The progress of the past year in pharmacology has been a repetition of its predecessor in the character of its results, but the bulk of remedial investigations throughout the world has been directed to a study of drugs already known rather than to an exploiting of novelties. The editor states that he has ceased to marvel at the "perfect substitutes for iodoform," and that the crop has not been so plenteous as in former years. Streptococcic serum has so far proved a disappointment, but he thinks that this may be due to the fact that we have as yet failed to grasp its scope, its limitations, and above all its technique. The favorable views entertained of formaldehyde have been sustained. The chief medicinal novelties of the past year have been certain salts of bismuth and silver.

In legal medicine we are informed that there have been no exceptional advances, though the literature of the year is said to include more than 800 articles in monograph. Nearly one-half of the indigenous medical literature in this department is said to be occupied in discussing the shortcomings of the expert medical witness. The discovery, by Abba, of a simple biologic test for arsenic is spoken of as the most striking single discovery of the year.

The work is, as usual, handsomely issued by the publisher; illustrations are introduced where needed, among which are some beautiful colored plates. The work as a whole forms the best synopsis of current literature in the English language. The arrangement is practical, easy of reference, and contains an excellent index.

We note occasional lapses into archaic forms of spelling in which "al" is retained in certain adjective forms; perhaps this is pardonable where so many authors are engaged on the same work. It is sometimes difficult even for a single writer to spell the same word in the same way on all occasions; how much more difficult it must be where several writers are engaged at the same literary task.

A Clinical Manual of Skin-Diseases. By W. A. Hardaway, A.M., M.D. Second Edition, Revised and Enlarged. Philadelphia and New York: Lea Bros. & Co. 1898.

This second edition of Hardaway's Manual is considerably improved, both in its arrangement and subject-matter. The work is divided into two parts. The first considers symptomatology, etiology, diagnosis, distribution, treatment and classification of skin diseases. Part Two embraces the diseases of the skin. This is made up of two divisions. The first includes the diseases of the skin

proper, and the other the appendages of the skin. The first group is divided into inflammations, hemorrhages, atrophies, new growths, and neuroses. This classification forms a rough division, but it can hardly be said that it is of particular aid to the memory, as some of the divisions are very large. For example, the class of inflammations contains fifty-eight separate and distinct diseases, and includes such widely varying disturbances as herpes, lichen, prurigo, and carbunculus. The division of new growths includes thirty-one disorders. Curiously enough, Morvan's disease is included in this division, though exactly what new growth occurs in this disorder we are at a loss to know, unless gliosis of the spinal cord is regarded as belonging to the pathology of the affection. There is certainly nothing in the author's description with the possible exception of the painless whitlow, and surely there is nothing in this that should place it among the new growths. The book is very inadequately illustrated, but forty-two figures being introduced into the text; some of these might with advantage be omitted, as they are simply valueless as an aid in diagnosis. For example, Fig. 15, designated circular or ringed erythematous syphiloderm, is taken from Squire and shows merely a number of approximately circular rings drawn on the surface of the neck, and as such might serve to illustrate any one of half a dozen varieties of skin diseases. The same criticism could be made regarding many of the other illustrations of the book.

The work abounds with prescriptions, and in the main the descriptive text is well written. Undoubtedly it will be found useful by many practitioners, but we believe that there are better works which can be obtained for about the same price.

RHEUMATOID ARTHRITIS: ITS PATHOLOGY, MORBID ANATOMY, AND TREATMENT. By Gilbert A. Bannatyne, M.D. Second Edition. Bristol: John Wright & Co.

It is refreshing for a reviewer now and then to obtain a monograph, as it admits of at least a succinct statement of the author's views regarding the topic treated. It differs from an ordinary text-book, in which a reviewer must be content with a most cursory statement of the objects of the work, general value of the volume, and as to its being abreast of the science of which it treats.

This monograph appeared first in 1896, and this, the second, edition early in the current year, for the purpose of emphasizing more fully the author's theory of the bacterial origin of the disorder. He concludes that there are at least two separate forms of the disease—one acute and undoubtedly microbic in character, the other chronic and probably degenerative. He points out the clinical differences between these two types and gives the essentials of the treatment of each. While he makes out a good case for the bacterial origin of certain types of the disease, we are not sure that we fully appreciate the clinical distinctions which he draws, and which he regards as quite essential in directing a proper course of treatment.

A historical account of the disorder is given in which he concludes that it has been known since the earliest times—indeed, that the characteristic osseous changes may be noted in the skeletons of the earliest peoples.

In the chapter on etiology and pathology he makes a powerful plea for the recognition of the disorder as a clinical entity. He effectually disposes of the

view that the disorder is rheumatic, that it is gouty, or that there are essential trophic changes in the nervous system. The theory of a mixed gouty and rheumatic origin, advocated by Hutchinson, is effectually disposed of. For the bacterial origin of the acute cases he makes out a fairly good case, claiming to have recognized an organism which is constantly present, and which, injected into animals, has produced a nearly similar disorder, and been again cultivated and again reproduced the disease, thus fulfilling the postulates of Koch.

PRACTICAL URINALYSIS AND URINARY DIAGNOSIS. A Manual for the Use of Physicians, Surgeons, and Students. By Chas. W. Purdy, M.D., LL.D. Fourth Revised Edition. Philadelphia, New York, and Chicago: The F. A. Davis Company. 1898.

The author says in the preface to this fourth edition that three large editions of this work have been exhausted within three years of its first appearance, and that it has been adopted as a text-book in upward of sixty medical colleges in the United States. Some chapters in the Chemistry of the Urine have been largely rewritten, in order to retain the work abreast of recent advances.

We do not believe that an extended review of the work at this time is called for, as it has already been so long before the medical public, and has met with such a uniformly favorable reception. Like the former editions, the present one is divided into two parts, the first dealing with the analysis of urine and the second with urinary diagnosis. There is an appendix dealing with the examination of urine for life insurance.

The work of Dr. Purdy is the most thorough and complete study of urinary derangements in the English language. It contains everything upon which an authoritative opinion can be given, and is up to date. It is not well issued, and is deserving of a better typographical setting.

A POCKET MEDICAL DICTIONARY. By George M. Gould, A.M., M.D. Philadelphia: P. Blakiston's Son & Company. 1898.

This attractive little volume, bound in morocco in flexible covers, gives the pronunciation and definition of some twenty-one thousand words relating to medicine and the collateral sciences. There is also included within its pages some very complete tables of the arteries, muscles, nerves, bacteria, thermometric scales, and a dose-list of drugs and their preparations in both the English and metric systems. The book is of moderate bulk and yet contains 530 pages. This is accomplished by using a thin but excellent quality of paper. The words are printed in heavy-face type, and the pronunciation follows in italics, ordinary type being used for the definitions. This greatly facilitates reference, as in scanning a page the eye readily catches the word sought for. The work is evidently based on Gould's Illustrated Medical Dictionary, which excellent work has long been a recognized standard. The definitions are necessarily short, rarely exceeding a line in length, as is necessary in a pocket dictionary. An alphabet arranged at the margin of the pages would facilitate reference, and could be easily supplied.

EDITORIAL COMMENT.

SYSTEM IN CASE REPORTS.

Modern medicine is not a matter of text-books; the student who wishes to keep abreast of his profession has to put time and skill into his use of the periodical literature of medicine. While so much that is of importance is made known through publication in periodical literature, it is surprising that so little effort is made to secure the presentation of results in a manner which will facilitate study of comparative results. The fault is seldom chargeable to the editor of the medium in which publication of new discoveries or confirmatory reports is made. He is forced to depend on the physician who prepares the article. The latter may be filled with enthusiasm; he probably has his subject at his fingers' ends, but all too frequently he forgets that his brother practitioner, for whose benefit he is writing, has not the same preparation, and that much of the good result sought is lost through case reports from which important details are missing, a loss which may almost vitiate the value of conclusions arrived at by the writer.

With a few brilliant exceptions this is to be said in general of the American case reporters; they are uniformly deficient in statistics. The foreign medical press shows a much better comprehension of what is needed in a case report which shall be really serviceable, the German reporters being particularly precise in this regard. It might almost seem advisable for any physician who is about to write a paper in which he uses his cases in support of a thesis to spend a short time in examining the methods of the Germans as shown throughout their publications. He will find that the cases contain all essentials—sex, age, diagnosis accompanied by necessary details, treatment specifically recited by day of the disease and dose administered, a brief view of the effect of the treatment while it is in progress, and the date of final cure or fatal result set down by day of the disease. With these elements, which lend themselves readily to the tabular form with great economy of space and ease of reference, it is easy to examine the results stated in the paper, and in case the reader agrees therewith to be intelligently grounded in such agreement; or in case of failure to agree with the conclusions, the independent investigator finds himself equipped with the data necessary for the discussion which may ensue.

This is by no means an unimportant detail. Reference to the most recent text-books will show the result of American carelessness in this regard. Whole pages and paragraphs are filled with discussion of foreign cases; American authorities too often are cited in the curt reference of foot-notes. Thus the patient and diligent American investigator loses the recognition which is due to his labors, and the reason is largely that the cases he has reported are deficient in one or more details which he has not thought to note, yet which are really important for a full study of his topic.

THE MIDWIFE EVIL.

The New York Medical League devoted much attention at its last meeting to a consideration of the danger to society inherent in the present laxity of control over midwives. It is impossible to exaggerate their baneful influence upon the poor, and particularly the foreign poor, in New York, and proportionately in smaller communities. In one district of the city these present-day practitioners in the school of Mrs. Gamp will be found to be German crones. Their authorization to practice consists almost solely in a tin sign tacked to the front wall of the house and bearing the inscription for those who can read it of "Geprüfte Hebeamme." If the neighborhood is Italian, there are practitioners of the same ghoulish sort, wrinkled crones from the slums of Naples or Messina, but each one strictly regular in her own illegal school, for each one has out her sign inscribed "Levatrice." In the Ghetto the same malpractice continues, and to an even greater extent. The signs are somewhat harder for the casual passer-by to understand, for they are all in Hebrew characters. Yet if one cares to decipher backward the uncouth symbols the writing on the wall is seen to be "Yordermodor," and while that may not be the Hebrew that David wrote, it is good enough Yiddish to proclaim to the New York Ghetto that a midwife is at call.

These humble obstetricians are necessary among the poor and in the large colonies of the lower classes of foreigners who have ferried across the ocean their home customs. It would be extremely difficult and in fact impossible to prohibit such work in a city like New York. At present they are almost always actually illegal. It is important to exercise a supervision of those who follow this calling and to exact some standard of attainments on the part of those who essay the practice. The League was outspoken in favor of a system of registration, license, and control of these women.

DANGERS OF IMPERFECT ABSTRACTS.

In the *Journal de Médecine de Paris* of December 18, 1898, there is an interesting account of the extraordinary properties possessed by acetate of thallium. The article in question appears under the title "Dangers of Acetate of Thallium," but as the real cause of the difficulty was an imperfect abstract which appeared in a medical journal, we comment upon it under a correct title, incidentally calling attention to this very unusual effect of the drug. A. Guinard, a surgeon from the south part of France, writes the editor, giving an account of a case to which he was called. The patient bitterly complained of the violent action of a remedy given by a colleague, which in eight days had caused the loss of the hair of the head, eyebrows, eyelashes, as well as of the trunk. A second case was seen not long afterward, in which the head of the patient resembled an ostrich egg. He had taken nine pills of five centigrammes each of the drug. In this case the eyebrows and eyelashes remained, but all of the hair on the body had disappeared with that upon the head.

H. Huchard, at the 17th of May, 1898, session of the French Academy of Medicine, reported on the acetate of thallium as a remedy in the sweating of phthisis. He found it to be of value in that affection, but noted that the administration of a few doses of ten centigrammes caused a rapid falling of the hair. In closing his communication he stated that the remedy, for this reason, should find no place in therapeutics.

The untoward effects in the above cases are due to the fact that a certain number of physicians received, without payment, small journals (unfortunate country) which had for their object the exploiting of certain pharmaceutical specialties. One of these contained, under the heading of "Sociétés Savantes," the following rubric: "M. Huchard read a report on the acetate of thallium in the night sweats of phthisis." The practitioner naturally concluded that a drug recommended by so eminent an authority would be of great value in that affection.

MEDICINE AND TERRITORIAL EXPANSION.

Apart from the interest which medical men as citizens must take in the new movement of this country, either for or against according as their reason leads them to determine, it is clear that territorial expansion or imperialism will appeal to their professional interest, and that at no late day. It is entirely reasonable to expect that in a short time the news will pour in from the medical officers

of the foreign garrisons detailing their experiences with the many complex problems of sanitation of troops in several foreign climates. The problems which these reports will suggest are only the beginning of much more that will straightway follow.

It is inevitable that the natural spirit of adventure, combined with the search for novelty, will appeal strongly to recent graduates in medicine to make the effort to secure their professional start in life in some attractive spot in the lands which are at least temporarily controlled by the United States, or have become a part of the national domain, either by annexation, as in the case of Hawaii, or by conquest. Without venturing on the expression of the opinion that such a course is altogether wise or likely to bring success, it is enough now to note that such a movement has already begun to manifest itself on the part of at least the younger and at present unattached members of the profession. Probably the most immediate manifestation of this will appear in the medical schools and educational hospitals. The young medical man who is thinking of establishing himself in the West Indies, in Hawaii, or in the Philippines will be sure to set investigations on foot as to what diseases are of characteristic occurrence and recurrence in the field which he is debating. Naturally he will call on his preceptors to aid him in acquiring this information. Thus by a very easy step the older members of the profession will be brought to a study of the same thing.

Nor is this all. With new territory the United States annexes several strongly featured groups of diseased conditions which at present are scarcely familiar. Scan the field with the most cursory glance, and several conspicuous examples come into view. In the Philippines there is the beriberi, and in the subdivision of the Visayas there is elephantiasis. Hawaii exhibits the systematic treatment of leprosy under segregation. The islands of the West Indies afford a conspectus of yellow fever ranging from Havana, which represents the worst, to Jamaica, where sanitation has almost stamped it out. These, with many others, will attract the study of special students. Yellow fever has been well studied from its limited appearances in the continental United States, but there will be immediate need for much more study and many more teachers. Now that Hawaiian leprosy has become American in name, the American medical men will surely accept the friendly rivalry of the great Japanese students of the disease and will enter into competition with them in researches in this field, which has so recently become a national one. The Philippines by themselves

may well form the scene of the most zealous study of the best trained intellects in American medicine.

It cannot be long before political imperialism makes its enthusiasm felt in medicine. That new movement will manifest itself in many ways; only a few of the more prominent have been indicated herein. These at least are sure to come soon. Others will follow as unfamiliar conditions become better known, and the American medical man will be found not far from the front in the process of reducing the new possessions to the more stable condition of American communities.

VITAL STATISTICS AND LIFE INSURANCE.

In our February issue we discussed the relation of decreased morbidity and mortality to medical incomes. There is a class that will be quite as much affected by changes in the mortality-rate in the near future, namely, the life underwriters. The prospectuses of many of these companies show a wonderful increase in assets, which in some cases reach the enormous sum of $250,000,000. In some instances the liabilities are stated, but in others they are significant by their absence. If one cares to inquire, one is often struck with the comparatively insignificant amount of capital with which these enormous aggregations of wealth were started.

The contracts made with insurers, based upon mortality tables constructed thirty or even twenty years ago, must of necessity have been very favorable for the accumulation of funds in these companies. If they did any considerable business, the decrease in death-rate, which must be somewhere in the neighborhood of 40 per cent in the last twenty-five years, could not fail to show a large balance on the credit side. This lessened mortality which has largely obtained, in our control of epidemics and lessened death-rate from infectious diseases, has lengthened the average duration of life, but necessarily it cannot be maintained indefinitely. Already the mortality statistics begin to show a relative increase in deaths from cancer, Bright's disease, and degenerative conditions. Necessarily, as the average age increases the diseases peculiar to advanced years must figure in increasing proportion in mortality tables. A decreased mortality in early life must give an increased mortality in those of advanced years.

The two elements upon which insurance is based are a calculation on the average longevity and the income derived from invested capital. The large accumulations of insurance companies have been favored by a decreasing mortality in early years. The lower rates of

interest which have prevailed throughout the world, and which bid fair to become lower rather than higher, have lessened the income from invested capital. Taking these two factors into consideration, is it not possible that the successful financiering of these great companies will be attended with more difficulties in the future than they have in the past.

Possibly in our references to financial questions involved we may not be correct in our judgment, but regarding the vital statistics and so far as these affect life insurance, we feel that we can speak with absolute precision. That the average age of persons now living is considerably above what it ever was in civilized countries is unquestionable. In consequence the diseases peculiar to advanced life must soon play a much greater rôle in vital statistics. Already it is seen in the increase of deaths from cancer. A recent writer claims that the deaths from this cause have increased fourfold in England in the last few years.

INTERNAL APPLICATION OF ANTISEPTICS.

One who watches current medical literature cannot fail to be impressed with the enthusiasm with which the profession turns to the use of internal antiseptics. The changes are rung on antiseptic inhalations in phthisis, antiseptic injections in gonorrhea, and antiseptic drugs in the treatment of typhoid fever.

The dismal failures attending the use of antiseptics in the treatment of the tuberculosis of the skin and of the larynx seem to be devoid of potent analogy, when the tubercular process appears in the lung. There is no reason to believe that lung tuberculosis is different in its pathological anatomy from that of the skin, excepting in so far as lung tissue differs in its anatomical arrangement from that of the skin. There is no reason for believing that the process there is more easily reached by the direct application of antiseptics than it is upon a free mucous surface such as that of the larynx.

In the treatment of gonorrhea changes are rung on various antiseptic injections with tiresome frequency, yet all writers practically agree that the gonococcus is not free upon the epithelial surface, but is found deep in the epithelium, beyond the direct action of antiseptics.

The difficulty of making an ancient ulcer of the leg aseptic has been recognized ever since we have had exact knowledge of the relation of infection to these conditions. There is no reason for

believing that a typhoid ulcer of the intestine could be more easily disinfected if it were amenable to direct application of antiseptics.

The above is not written with a view of setting up the opinion that antiseptics are of no value in the treatment of these infections. It is possible that they may be of service in aiding the struggle of the normal tissues in combating an infective process, and they may aid in preventing the extension of such infection to healthy tissues. But it is written with the idea of combating the commonly exploited notion that such substances act directly upon the germs of disease and that they act as antiseptics in the same way that the term would be applied to describe the killing of the anthrax bacillus in a test-tube with bichloride of mercury.

THE TREATMENT OF GONORRHEA BY HOT WATER.

What has been said above regarding the use of antiseptics in the urethra receives additional emphasis from the pen of C. S. Murrell. In a recent number of the *Massachusetts Medical Journal* he suggests the prolonged use of hot-water irrigations in a chronic gonorrhea. In his method a soft catheter is passed within about one inch of the prostatic urethra. Several quarts of water as hot as can be borne is then allowed to flow into the urethra, by which means the anterior portion of the urethra is thoroughly irrigated. He claims that under this treatment the average duration of the disease is lessened and the character of the discharge changes almost immediately; strictures and other complications, such as involvement of the deeper urethra, which so commonly follow astringent injections, are very rare. These observances were intended to confirm the view that massive injections are largely of value from their cleansing action on the mucous membrane, and the high temperature at which they are sometimes given. The results claimed by Murrell are quite as good with simple hot water.

We take this opportunity to reaffirm our previously expressed views, that if precision is to be reached in gathering statistics as to the value of a given treatment in this affection, all cases must be examined for the gonococcus. Valentine has given explicit directions as to how this is to be done:

1. Spread the discharge, filament, or sediment as thinly as possible over the cover-glass.

2. Let it dry under the bell-glass to protect it from dust or air microbes.

3. Pass it three times through a Bunsen flame, with an even motion, to "fix" it.

4. Drop eosin (saturated solution in alcohol) upon the cover-glass and hold it over the closed Bunsen jet until a slight visible evaporation results.

5. Hold it under a stream of water until all the eosin that can be washed away is carried off. If the cover-glass standing on edge over filter-paper gives it ever so slight a tinge, the washing has been insufficient and must be repeated until nothing but clear water comes from the glass.

6. Drop two-per-cent methylene blue upon the glass and let it stand for five minutes.

7. Wash as described under No. 5 and mount for examination.

WHAT IS UNDERSTOOD BY THE TERM ORGANIC LESION?

That there is a widely varying significance attached to this term is plain, from a casual conversation with medical men as well as from discussions in medical societies. The significance to be attached to the term organic lesion will vary somewhat according to the organ that is under discussion.

By the term organic heart lesion medical men often understand a valvular disease of the heart, while some would understand this term to include changes in the muscular structure, which could be appreciated by the naked eye or seen by the microscope.

The same term applied to diseases of the stomach would probably be understood to mean a lesion of that organ that could be appreciated by the unaided senses, or by the microscope.

A much greater variation in the definition of the term could be found in discussion of diseases of the nervous system. Here some will use the term to designate a true sclerotic process in which nerve cells have been replaced by embryonal tissue, or in which nerve cells have undergone pigmentary or fatty degeneration so that its function has entirely disappeared. Others, again, would understand by the term a disease which could not be included among those which are commonly classified as functional, such as hysteria, a condition which has no known anatomical basis, or to those other disorders of the nervous system whose anatomical substratum eludes our present somewhat imperfect means of research.

It is obvious that this varying use of this important term adds not a little obscurity to medical discussions and medical literature.

TITLES TO MEDICAL ARTICLES.

We have often thought of the boon it would be to medical literature if the titles of medical articles could be passed upon by an expert librarian. How many valuable observations are lost to the scientific world because the titles under which they appear are hopelessly misleading, if not absolutely inaccurate. How many times we read "an interesting article," "a personal observation," "a unique experience," as the caption of a medical article which effectually conceals its identity and thus makes it unavailable for future reference. Another and almost equally grave fault is a title too long to admit of ready classification and indexing. Some that we have seen contained fifty or more words to express the writer's idea of what was in the article. Still another fault is one in which titles are somewhat misleading; we sometimes take up a journal in which a writer sets forth his personal experience in an operation or the use of a drug. Naturally we expect to find a graphic description of one who has experienced their effects in his own person; to our surprise, almost invariably the medical man has operated upon a patient, and it is the latter's feelings that are graphically portrayed.

We cannot urge too strongly upon authors the necessity of care in formulating the title of an article, which should in all cases be as succinct and short as possible. In case it is long we would urge the use of a subtitle, or what perhaps is still better, a brief syllabus preceding the body of the article; the latter would certainly be a great help to medical writers. It is a time-saving device, extensively adopted by the legal profession, and one which could be used to the great improvement of scientific literature.

HOMING PIGEONS AS MEDICAL MESSENGERS IN THE COUNTRY.

Phillip Arnold states in the *Journal of the American Medical Association* of January 28, 1899, that he receives messages from his patients in the country every day, in addition to his daily visits to them. His plan usually is to leave a pigeon the day he makes a visit and direct that the pigeon be liberated the next morning with such a message as he may require. With a little care in the instruction of the nurse, he is quite well informed of the condition of his patient before he starts to make the next visit. In a country practice this is important, as it enables the physician to judge what will be needed for his patient the next twenty-four hours, as the country physician generally acts as his own druggist. Then, again, country doctors cannot often make more than one call in the twenty-four

hours, and by an aerial messenger service he can get practically the same information as the doctor in the city or hospital practice, who makes several calls, by simply leaving two pigeons and getting a morning and evening report. The doctor who has a country practice is often called from his country patient to other persons sick in the neighborhood. This will make him late in getting back, and it is a great convenience if he can send this information home, practically with the same speed as the city practitioner through the medium of the telephone system. That he remains in closer touch throughout the illness of his country patients there is no doubt, a fact that will be appreciated.

He would suggest that physicians wishing to take this matter up in earnest should first of all purchase only the best kind of Belgian homing pigeons, one or two pairs well mated. No reliance can be placed on young birds just purchased for message carriers; the young birds must be hatched in the home loft. The old birds secured for breeding must not be given their liberty until they have hatched one or two broods. The youngsters, at a certain age, can be trained.

THE DIAZO-REACTION IN TYPHOID FEVER.

E. T. Duke, in the *Maryland Medical Journal* of January 14, 1899, reaffirms the value of Ehrlich's reaction in the diagnosis of typhoid fever. The original formulæ are still employed, which we reproduce. They consist of three solutions:

NO. 1.

Sulphanilic acid	4 grains.
Hydrochloric acid	1½ drachms.
Distilled water	4 ounces.

NO. 2.

Nitrite of sodium	5 grains.
Distilled water	2 ounces.

NO. 3.

Ammonia water.

Add one drop of No. 2 solution to forty drops of No. 1 in a test-tube, to which solution an equal quantity of the urine to be examined is added. Shake well and add a small quantity of ammonia water with a pipette. If the reaction is present, a bright red color will be seen at the point of contact with the ammonia water. The red color will be diffused and a tinted foam will be seen at the top, if the test-tube is shaken; this Duke regards as positive evidence of the success of the reaction.

From the fourth to the seventh day of typhoid fever, and thereafter until convalescence is begun, the reaction is present. In rare cases of phthisis it is occasionally found, but he has only seen it in one case out of a number, and that was in a patient with general tuberculosis. A point regarding this reaction which we do not remember to have seen previously stated is that sometimes it is not obtained until twenty-four or thirty-six hours after the urine has been passed.

He gives a table of twenty cases of typhoid fever, in which the reaction was obtained in all but three; of these two were convalescent, and in the remaining one the examination was faulty. An examination in twenty-one cases of fever of doubtful origin showed an absence of the reaction; in all but two typhoid was excluded by the subsequent history of the cases. In eight cases of pulmonary phthisis, four cases of scarlet fever, two cases of pneumonia and jaundice, and in one case each of remittent fever, gastritis, malarial fever, and paresis, the reaction was absent. Out of a total of sixty-one cases it was found but once (a case of general tuberculosis) in a patient not suffering from typhoid fever.

The results obtained by Duke agree substantially with Krokiewicz, who made 16,367 tests in 1105 cases. He found the reaction present in every case of miliary tuberculosis, and it was frequently found in cases of pulmonary tuberculosis which ran a rapid course. With the discovery of the Widal test, the diagnostic importance of the diazo-reaction has diminished. The precision of the serum test has necessarily relegated the diazo-reaction to the rear. It is to be remembered, however, that the latter is of great value, particularly as it is usually found several days before the serum reaction can be obtained.

The diagnosis once established by the serum test and the clinical symptoms, the diazo-reaction is of value in observing the course of the disease. Its disappearance marks the beginning of convalescence; if it persist, recovery cannot be said to have taken place, even if the temperature has returned to normal and all clinical symptoms have disappeared; its reappearance marks a relapse in the disorder.

The ease with which the test can be applied commends it for general clinical use. There is no reason why any trained nurse cannot be taught to make the test accurately. A daily record of the presence or the absence of the reaction would be of great value in the clinical record of a case of typhoid.

The diazo-reaction is of undoubted value in the diagnosis of typhoid fever. Its clinical application is so easy that it should be

employed in every case. While less certain than Widal's test, the latter is practically impossible excepting in a well equipped laboratory.

A MONUMENT TO HANS WILHELM MEYER.

A fitting tribute to the memory of a scientific physician was unveiled at Copenhagen on October 25 last. The inaugural address was delivered by Sir Felix Semon, who referred in the following words to Meyer's most striking contribution to medical science:

"It is now just thirty-one years since he was one day consulted by a girl, aged 20 years, who suffered from deafness, whose voice was most peculiar, and the expression of whose face was almost idiotic. Treatment directed to the ears and to the throat failed, and it was not until the puzzled observer one day introduced his finger into the space between the nose and throat that an unexpected solution was met with. Instead of penetrating into an open cavity, the finger was arrested by a large, soft, easily bleeding mass, a condition the existence and nature of which, in those days, formed a *terra incognita*. Meyer succeeded in removing the mass by operation, with the result that the deafness was materially improved, the voice became natural, and the idiotic expression of the face disappeared. With the true instinct of a scientific observer, who develops what is ultimately to become an important truth from small beginnings, Meyer did not drop the clue which a casual observation had placed in his hands. He began studying the subject in all of its bearings; he examined the masses he had removed with regard to their structure, and finding them to be glandular in character, gave them the name of 'adenoid vegetations;' he investigated the results which obstruction of the space between the nose and throat exercises upon respiration, hearing, articulation, facial expression, and general mental and bodily development; he examined 2000 Copenhagen schoolchildren with regard to the frequency of this affection. He made himself the apostle of his own teaching by proclaiming it, not only in his own country, but in scientific publications abroad."

SUMMARY OF MEDICAL PRACTITIONERS IN THE STATE OF PENNSYLVANIA.

The *Pennsylvania Medical Journal* for November, 1898, gives an interesting summary of the physicians of the State classified according to the school of practice. The following is a table giving the number credited to the different schools:

"Regulars"	7102
Homeopathists	1017
Eclectics	157
Electropathists	15
Physio-medicalists	10
Botanics	5
Magnetic	1
Hygeio	1
Oculist	1
Baunscheidt	1
Failed to report	732
Total	9042

Significantly, there are no osteopathists in this collection, but it is to be remembered that this particular fad had its origin in the West; like the potato-bugs, its extension seems to be by continuity, so that some time will probably elapse before there will be more than an occasional sporadic case in the East.

We note that throughout these tables where the word regular is used to designate physicians, it is always placed in quotation marks, from which we infer that the word is used in a somewhat irregular manner. Time has so entrenched this use that we fear it will be long before it can be eliminated. How much better it would be if no such designation had been adopted and the profession had styled themselves simply physicians, in contradistinction to homeopathists, botanics, etc.

Of the 7102 physicians in the State, 3334 are credited to the various county medical societies, which shows that nearly one-half of the profession have society affiliations.

A NEW MEDICAL JOURNAL.

Under the title *L'Intermediaire des Neurologistes et des Aliénistes* there appears a unique medical journal, which is evidently designed as a sort of international clearing-house for neurological literature. It is under the direction of Dr. Paul Sollier, formerly of the Bicêtre and the Salpêtrière. It is to appear on the 10th of each month, and the subscription price is fixed at 6 francs for France and 7.50 francs for other countries. It is issued by Felix Alcan. The journal is to appear in three languages—German, French, and English—and will undoubtedly prove interesting and useful to alienists.

The *Journal of Nervous and Mental Disease* is the only American neurological journal mentioned; the *Alienist and Neurologist* and the *American Journal of Insanity* are omitted.

An interesting and unique department in the new journal is

a department of questions. In the first number thirteen are given, from which we excerpt a very few, with the hope that they may prove suggestive to undergraduates who are eagerly searching for a topic for a graduation thesis, and for mature practitioners who earnestly desire the advancement of medical science.

No. 1 of these questions reads as follows: "Are there recent and general works about the question of synalgies and synesthesies?"

No. 4: "Are there experiments proving the plasticity of the peripherical cutaneous neurone?"

No. 5: "Has there been any use of the theory of Flechsig on the centers of projection and association to establish (1) a mecanism of ideation, (2) a mecanism of the language?"

No. 6: "Is the loggorrhea which appears in the course of the abscess of the second gyrus temporalis a symptom of irritation or a simple reflex transmitted by the fasciculus longitudinalis anterior to the center of articulate language?"

No. 8. "Has any one made any distinction between the feeling of the self and the feeling of his own existence?"

No. 13: "I observe a case of hemiplegia with total facial paralysis in which the orbicularis is much more injured than the cases published by Miraille. Since those last other ones have they been described?"

The number "13" has been considered unlucky, and we think it may be somewhat responsible for the slight obscurity noted in the English of some of these quotations. If any of our contributors should be tempted to take them up either for MEDICINE or for *L'Intermediaire*, we would especially call their attention to the closing notice in the journal, which reads: "Considering the space required by the three-fold texte, we should be much obliged to our correspondents if they would write their questions and especially their answers in the most possible short manner."

ABSTRACTS.

MEDICINE.

Pathology of Diphtherial Paralysis.—

F. E. Batten, in *Pediatrics* of February 1, 1899, gives the results of his studies based on the examination of six cases by Marchi's method. After removal from the body, the brain, spinal cord, and nerves were hardened in Muller's fluid, some pieces being first removed from different regions which were hardened in formalin and examined by Nissl's method. The parts examined were the cranial nerves, spinal cord, anterior and posterior roots, posterior root ganglia, vagus, phrenic, nerves to the upper extremities, and nerves to the lower extremities.

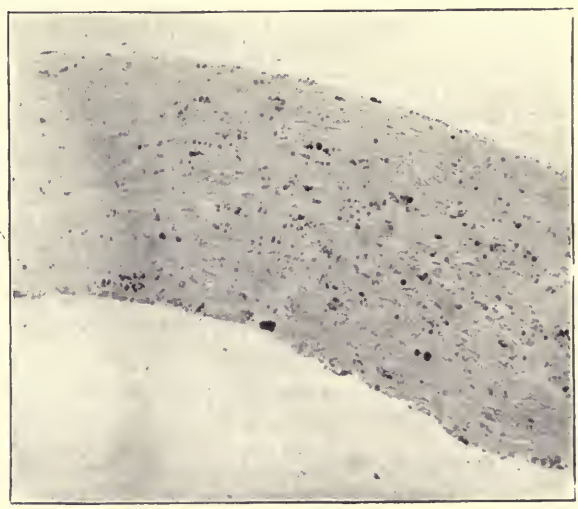

FIG. 1.—Longitudinal section through the fourth cranial nerve, showing marked degeneration. Case 2.

All were children under the age of six years. Five were cases of diphtherial paralysis; one was a case of death fifteen days after diphtheria, in which there was no paralysis. The duration of the longest case was one hundred days; that of the shortest forty-three days, excluding the case which only lasted fifteen days. Of the six cases, four gave a positive result; they were Nos. 1, 2, 4, and 6, and

FIG. 2.—Longitudinal section of right anterior crural nerve. Case 2.

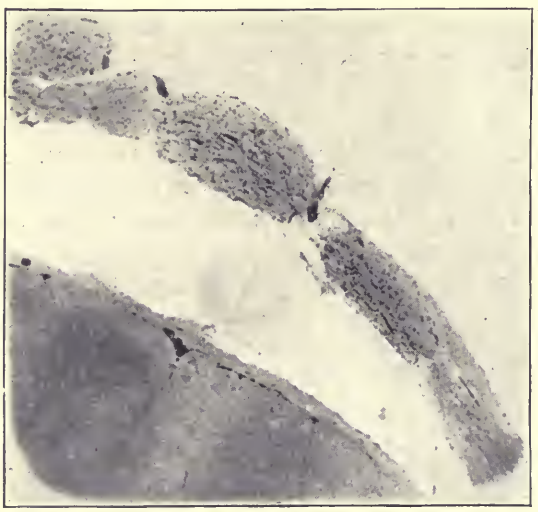

FIG. 3.—Posterior nerve root, cervical region, showing marked degeneration. Case 6.

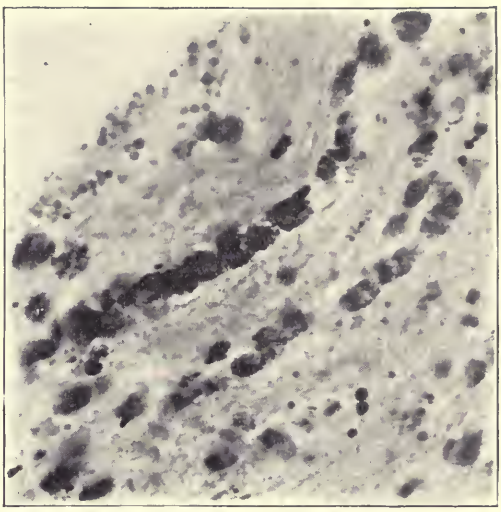

FIG. 4.—Posterior nerve root to show character of degeneration. Case 6.

they showed parenchymatous degeneration of the nerves. Case 3, which died on the fifteenth day, gave a negative result, and also Case 5, one of diphtherial paralysis with hemiplegia, due to softening, death having occurred on the fiftieth day after infection. The changes were most marked in Case 6, a boy who died one hundred days after infection. Of the four cases in which changes were found, one or more of the ocular nerves were affected in three; in one no examination was made. In three the spinal cord showed some changes in the gray matter, the cells of the anterior horns appearing to be normal, by Nissl's method.

In all four cases the anterior and posterior roots were affected. In two cases in which examination was made, degeneration was found on both sides of the posterior root ganglia; the ganglia in six appeared to be normal.

The author thinks that the evidence obtained from examination of the above cases points to a parenchymatous degeneration of the nerve. That the affection is primarily peripheral would seem probable from the fact that the fibers on both sides of the anterior root ganglia are involved, and that the anterior horns appear normal when examined by Nissl's method. It has lately been shown by Mouravjeff that changes in the cells of the anterior horns occur during the first week after infection. Parenchymatous changes are most marked five or six weeks after infection. At this time the cells in the anterior horns have recovered, or have undergone

atrophy, so that the present series of cases cannot be used as an argument against a primary cell infection.

TABLE OF CASES.

	Case 1, aged 2½. Duration, 43 days.		Case 2, aged 2¼. Duration uncertain.		Case 3, aged 5. Duration, 15 days.		Case 4, aged 3. Duration, 60 days.		Case 5, aged 4. Duration, 50 days.		Case 6, aged 1½. Duration, 100 days.	
	R.	L.	R.	L.	R	L	R.	L.	R	L	R.	L.
Cranial nerves.....1st	o	o	o	—	o						—	
Cranial nerves.....2d	o	o	o	o	o						o	
Cranial nerves.....3d	x	x	o	x	o							
Cranial nerves.....4th	xx	—	xxx	xxx	o							
Cranial nerves.....5th	o	o	o	o	o							
Cranial nerves.....6th	xxx	xx	o	o	o						xxx	
Cranial nerves.....7th	x	o	o	x	o							
Cranial nerves.....8th	o	o	o	o	o							
Cranial nerves.....9th	o	o	o	o	o						xxx	
Cranial nerves.....10th	o	o	o	o	o						xxx	
Cranial nerves.....11th	xxx	—	x	o	o						—	
Cranial nerves.....12th	xxx	xxx	—	—	o						—	
Spinal cord, 5th cervical	o		xx		o		xx		o		xxx	
Spinal cord, 5th dorsal	o		o		o		x		o		o	
Spinal cord, 5th lumbar	o		xx		o		xxx		o		xx	
Anterior nerve roots	xxx		xxx				xx				xxx	
Posterior nerve roots	xx		xx				xx				xx	
Nerves in posterior root ganglia.	xx		—				xxx				—	
Vagus	xx	x	o				—		o	o	xxx	xxx
Phrenic	x	xx	xxx	xxx			xx	x	o	o	xxx	xxx
Nerves of upper extremity	xxx	xxx	xxx	xxx				x			xxx	
Nerves of lower extremity		xxx	xxx	xxx				o				

EXPLANATION: x, slightly affected; xx, moderately affected; xxx, markedly affected; —, not examined; o, not affected.

The author summarizes the literature of diphtherial paralysis, and closes with the statement that "the dominant lesion in diphtherial paralysis is a parenchymatous degeneration of the myelin sheath of the nerves, and that this degeneration affects both motor and sensory fibers alike."

Sanitarium Treatment for Consumptives.—

J. Edward Stubbert, in the *Philadelphia Medical Journal* of January 21, 1899, gives the annual report of the Loomis Sanitarium for Consumptives, at Liberty, Sullivan county, N. Y. During the year 204 patients were treated, of whom 28 were discharged cured, 11 with the disease arrested, 67 improved; in 6 there was no change, 41 were worse, and 4 died. There remained under treatment 47 cases.

Of the condition of patients when admitted, 17 were in the incipient stage without bacilli; 58 were in the incipient stage with bacilli; 102 were moderately advanced cases, and 27 far advanced.

The writer claims a distinct improvement in this the second year of the operation of the Sanitarium over the first year. During the first year eight per cent of the patients discharged had lost their tubercle bacilli; during the past year 23 per cent showed the same favorable condition. During the first year 73 per cent of those discharged gained in weight, while during last year ninety-seven per cent of those discharged gained in weight. The number of those discharged as cured increased from 13 to 17 per cent. During the first year 10 per cent of those discharged had their disease arrested, while during the last year 7 per cent had their disease arrested.

Of those patients discharged after a residence of three months or less, 6 per cent were cured, while among those remaining longer than three months, 11 per cent were cured. The treatment has been essentially climatic, hygienic, and dietetic. The climate of Liberty is well adapted to the treatment of tuberculosis throughout the year, but there is even more marked improvement among the patients during the winter months than in the summer. The Sanitarium is at an elevation of 2300 feet, the atmosphere is dry, and there is an abundance of sunlight.

The strong winds which sometimes prevail, and which are supposed to be detrimental to the cure of tuberculosis, have not proved to be so. The author has seen eighty patients gather from their various cottages for their meals when the snow was one or two feet deep and the thermometer below zero, with a strong wind blowing, without the least detrimental effect. On the contrary, it seemed to improve their appetites and digestion. He has not seen a case of bronchitis or influenza that could be attributed to the elements. His experience during three cold seasons he thinks negatives the popularly accepted idea of the injurious effect of winds and stormy weather upon cases of tuberculosis.

The temperature of 100° F. does not contraindicate moderate exercise in the open air. If the body temperature is not above 99° F. no restriction at all is placed upon exercise, and the patients are encouraged to make pedestrian trips of from 2½ to 12 miles daily; he has never seen bad results from this exertion. He thinks the rest cure tends to impair the general nutrition.

The writer's investigations in the use of antitubercle serum have been continuous; he is not ready to pin his faith to this form of treatment, but no bad results have been reached and a fair number of cases have apparently improved under its administration. It is difficult to separate climatic and moral influences from any that may be exercised by the serum. The three apparent effects from its use

have been eradication of temperature, decrease of tubercle bacilli, and possible immunity conferred upon patients after returning to their homes. He has restricted its use at the Sanitarium to incipient cases. The serum of De Schweinitz, furnished by the United States Government, was employed. Antistreptococcic serum was employed in ten cases which showed this infection. Results on the whole were favorable; in most of the cases this germ disappeared from the sputum.

Among drugs which have been employed, ichthyol in keratin-coated pills has been most satisfactory. This remedy seems to be indicated not only in pulmonary tuberculosis but in cases involving the intestines and genito-urinary tract. Large doses of this drug are well tolerated and do not cause gastric disturbance. As much as a drachm a day may be given.

Creosote has generally proved disappointing because of its deleterious effects upon the stomach, intestines, and kidneys.

Appendicitis in Children.—

F. Martin, in the *Canadian Practitioner and Review* of January 18, 1899, reports four cases. The first was that of a lad aged 12 years, who had been constipated for several days. He had shooting pains in the abdomen, the temperature was 102.8°, and pulse 129. There was tenderness in the right iliac fossa, but no tumor could be found, either externally or by rectum. Enemata were ordered, and the case progressed favorably for about ten days. An examination at this time revealed a tumor, which could be felt a short finger's length above the sphincter. After exploring with a grooved needle, this was opened through the rectum and a pint of offensive pus evacuated. From that time the patient was practically well.

A second case was that in a boy 14 years of age, who had pain in the right groin and temperature of 101.2°, with tenderness and dulness over a sausage-shaped tumor in the right iliac fossa. The same treatment was employed as in the former case. Four days after the beginning of the symptoms he began to strain at stool, after which a tumor could be felt per rectum. This was explored on two successive days, but no pus was found. The acute symptoms all subsided, and on the ninth day considerable pus was passed by the bowel, which was followed by recovery.

A third case, a boy aged 10 years, when first seen had a temperature of 101.4° and a pulse of 104. The tongue was coated, and there was tenderness in the right fossa. On the next day a lump could be detected, which steadily increased in size for three or four

days, until the lower limit could not be made out and the upper was within a finger's breadth of the liver. This tumor was explored on three different occasions, the last time revealing a trace of pus. No operation was performed, and it is stated that at this time he was comparatively well, with the exception of pain in limbs, and vertigo.

A very interesting case is that of the fourth patient, a boy aged 10 years, taken ill on Wednesday with pain in the bowels. On Saturday a distinct tumor could be seen in the right iliac fossa, which subsided in a few days. On the following Tuesday (seven days after the onset) pus was obtained by a hypodermic needle passed through the sixth or seventh intercostal space in the right nipple line. Thinking the case clearly one of empyema, a tube was inserted through one of the lower intercostal spaces at the back, with a negative result. Without any marked change the patient lingered, and died in the seventh week of his illness. The author saw the case in consultation, late in the course of the disease, and considered it one of hepatic abscess.

At the post-mortem the appendix was found to be completely obliterated, the cæcum and neighboring bowel gangrenous. An old but distinct track of pus, with limiting adhesions, could be traced up behind the colon, behind and up over the right lobe of the liver to a depression upon its upper surface about the size of a hen's egg. Fully half a gallon of pus was found free in the abdominal cavity. The pleural cavity was normal.

The author refers to the fact that much has been written as to when to operate in appendicitis. While he thinks that an early operation might have saved the life of the fourth patient, he asks if it would have been justifiable in the cases of the other three. Certainly the fourth case is of great interest from a diagnostic standpoint, and shows how confusing the symptomatology of appendicitis may be. The cases taken together emphasize the necessity of a thorough examination in every case of suspected appendicitis, which should include an exploration of the rectum.

Prophylaxis of Army Typhoid.—

In the January issue of MEDICINE we discussed editorially some of the sanitary lessons of the late war, in which we animadverted at some length upon the want of sanitary arrangements in the home camps. S. O. Meyers, in the *Albany Medical Annals* for January, 1899, discusses the same topic with much greater precision and in such vigorous language that we quote his words as an addendum to our editorial. He says:

"The civilian is practically free to eat, drink, and do what he pleases. The soldier is a part of a great machine under the absolute control of a superior. His eating, drinking, sleeping, downsittings and uprisings are governed by some one beside himself, and for his physical welfare that some one is responsible. If he gets typhoid it is due to lack of knowledge and care of his superior. It is superfluous to enter upon a discussion of the etiology of typhoid. It is sufficient to state that, although insects and personal contact may convey the bacillus, nine cases out of ten are caused by contaminated drinking-water. This is in accordance with the experiences and teachings of the best authorities of the present day, and needs no farther elucidation. Thousands of soldiers were encamped along the San Juan river. They bathed their bodies, laundered their clothes, drowned their pediculi, urinated and defecated on its banks, and drank its water. At Camp Wickoff, men and horses drank from a pond and afterward from wells, situated in the midst of privy vaults and innumerable slop holes, in a porous soil that was undrained and unsewered. At Chickamauga, a spring that was much frequented by the soldiers was but twenty feet from a "sink hole." With drinking-water from such sources is it any wonder that many contracted typhoid? The wonder is that any escaped. A wise and skilful general protects his men from injury by shot and shell by forts, bomb-proofs, embankments, and trenches. Thousands and millions of dollars are spent on defensive fortifications. Bad drinking-water has killed six men where bullets have killed one, and I insist that it is the duty of the government officials to provide, not 'fair' or 'potable' but the very best absolutely clean water for the American soldier to drink. If it is worth while to spend time, skill, and unlimited thousands to protect the soldier from injury by bullets, it is six times as necessary to protect him from the bacillus typhosus by giving him clean water."

A Case of Cholecystico-Gastric Fistula Accompanying Diverticula in the Duodenum.—

A. G. Nichols, in the *Montreal Medical Journal* for November, 1898, gives an example of this rare complication. The patient was an aged woman who was admitted to hospital for a fracture of the femur. Nothing directing attention to the abdominal organs was noted.

At the autopsy the stomach was found to be long and fusiform, with atrophied walls. The main feature was an adhesion between the pyloric region one-half inch from the pylorus along the line of

the lesser curvature to the gall-bladder. The duodenum was deeply congested in the region of the bile papilla. That papilla was absent, being replaced by two ulcerous openings, leading into the distended end of the common bile-duct, which was occupied by a mulberry-like calculus the size of a hickory-nut. The rest of the intestines beyond presented senile atrophy.

The liver was small, thin, and flabby, of a dark color, showing upon section a considerable amount of bile-staining. Between the anterior wall of the gall-bladder, which was elongated, and the stomach was a fistulous opening large enough to admit a large probe. One small, mulberry-like calculus of the mixed pigment and cholesterin type was present in the gall-bladder. The cystic duct was distended, as was also the common duct. Immediately above the entrance of the cystic into the common duct was a large irregular calculus. The common duct was distended to the size of the index-finger and contained gritty yellowish bile.

The duodenum was deeply injected, presenting evidence of acute inflammation. Immediately below and anterior to the orifice of the common bile-duct was a saccular diverticulum about 5.5 centimeters long and as thick as the last joint of the thumb, consisting of the serous and mucous coats, the muscularis being absent. It contained inspissated feces. About two inches lower down, near the point where the duodenum pierces the mesentery, was a second diverticulum directed upward toward the head of the pancreas.

Milk-leg Following Typhoid Fever.—

In the *International Medical Magazine* for January, 1899, J. M. Da Costa says that out of one hundred and thirty-five soldiers who have been treated for typhoid fever in the Pennsylvania Hospital, sixteen have suffered from milk-leg. Nearly 12 per cent of those treated suffered from this complication, while its frequency in the general run of cases amounts to but one or two per cent. He is unable to give any explanation for the frequency of this complication among the typhoid cases occurring in soldiers returned from the late war. Many of them were from camps where no long marches had been made. Of the sixteen cases, five were in the left leg and eleven in both legs. He was formerly of the belief that this condition was due to phlebitis. The condition is one of thrombosis, in which inflammation may or may not be present; this explains why in some cases there is marked tenderness and in others none. The pressure of the clot may cause secondary affection of the accompanying artery, which results in arterial thrombosis, and may be

followed by gangrene of the foot. Fatal results from this condition are comparatively rare. In one case the complication appeared on the fiftieth day, and in another on the fifty-ninth day of the disease.

It is treated by elevating the leg and applying hot lead-water and laudanum to relieve pain. A light laxative is given, unless the diarrhea of the fever persists. Subsequently, if there is much pain, belladonna plaster is applied in narrow strips, or belladonna ointment is used. Absolute rest is essential, and great care should be exercised in not allowing the patient to get out of bed too soon. When he does get up an elastic stocking or bandage should be applied. Da Costa has known the complication to persist; in one case a patient could not walk without pain and swelling for eighteen months after the attack. Milk-leg, while painful and tedious, is not to be considered a grave complication of typhoid.

Focal Hemorrhages in the Spinal Cord from Traumatism.—

Pearce Bailey presented a paper on this subject to the Johns Hopkins Hospital Medical Society (*Johns Hopkins Hospital Bulletin*, December, 1898) in which he expressed a belief that focal hemorrhages of the gray matter were by no means infrequent. He gave some of the diagnostic points which enable a distinction to be made between such hemorrhages and those which are sufficiently large to be accompanied by compression of the cord. These focal hemorrhages are confined almost entirely to the gray matter and are almost always found in the cervical or upper dorsal region. The extravasation on its absorption leaves a cavity which may remain intact or be filled by new tissue. Secondary degenerations are usually not pronounced. The sensory symptoms consist, in addition to pain in the neck, of a loss of pain or temperature sense, with perfect preservation of tactile sensibility.

The prognosis is better than for any other form of injury to the cervical region of the spinal cord. Several cases were cited to show how rapid recovery may be. Two personally observed cases were also reported. In one, after complete paralysis of arms and legs, with loss of power of the sphincters resulting from a diving accident, the patient could use his hands, and walk unassisted up four flights of stairs, in less than two months; the other, a man who, as the result of a fall of thirty feet, was completely paralyzed in the legs, with retention of urine, was able to go to work (night-watchman) in two months.

This paper is very instructive, dealing as it does with the much-

discussed question of traumatism of the spinal column; it throws considerable light on the pathology of these affections, and incidentally shows the relation which may exist between traumatism and syringomyelia.

A New and Convenient Clinical Method of Staining Malarial Parasites.—

Dr. Futcher (*Maryland Medical Journal*, Nov. 5, 1898) recently reported to the Johns Hopkins Hospital Medical Society that he had found a convenient method of staining the parasites in dry specimens, which was quick and serviceable for office practice.

The blood specimens are made in the usual way described by Ehrlich, making thin films on cover-slips, and then are fixed in a one-per-cent solution of formalin in 90-per-cent alcohol. After immersion in this solution for only one minute, the desired stain can be immediately used without washing off the excess of fixing agent. As a staining agent a saturated solution of thyonin in 50-per-cent alcohol is used, of which 20 cubic centimeters is added to 100 cubic centimeters of two-per-cent carbolic acid solution, and this mixture is kept in stock for use as required. It is better to keep it for some time before staining specimens, as it improves with age.

The ordinary smear preparation is first fixed in the formalin solution for one minute, and without washing off the excess of solution, stained with thyonin for from ten to fifteen seconds. Ten seconds generally gives the most satisfactory results. The excess stain is washed off and the specimen, mounted in balsam, is ready to be examined.

The malarial parasites come out distinctly with this stain, and retain the color much better than when stained with methylene blue. The thyonin stain has also been used to bring out the flagellated processes in the estivo-autumnal infections, and some good specimens have been obtained.

Matches Free from Phosphorus.—

In the January issue of MEDICINE we referred to a discovery of a mixture for making matches, composed of sesquichloride of phosphorus and potassium chlorate. The *London Chronicle* contains an account of the discovery by S. H. Rosenthal and S. J. von Kourocki, of Berlin, of a mixture which fulfils the conditions imposed by the Belgian Government, in the competition for a prize. The three conditions named by them were that a match must contain no phosphorus or other poison, it must not give out any poisonous gases in combustion, and it must strike everywhere. These conditions the

Berlin chemists claim to have fulfilled, and they further maintain that matches made by their process can be produced as cheaply as the ordinary ones and by the same machinery and staff.

This discovery, if confirmed, is of interest from the standpoint of public health. Matches have been used for suicidal purposes, and accidental cases of poisoning have been not infrequently observed in children. These considerations, however, are insignificant when compared with the injury to health caused by phosphorus in match factories. If this discovery result in the stamping out of necrosis of the jaw, now so common among operatives in match factories, and which in the vernacular of the trade is known as "phossy jaw," it will remove the chief danger of this occupation.

SURGERY.

Pure Anesthetics.—

At a meeting of the Society of the Anesthetists (*Clinical Journal*, Dec. 7, 1898) William Ramsay stated that the chief impurity of chloroform is carbonyl chloride and that this substance is irritating to the mucous membranes and makes respiration difficult. The presence or absence of this substance makes chloroform "sweet" or "harsh." The impurity, he says, will develop in perfectly pure chloroform. To prevent this dealers are in the habit of adding a small quantity of alcohol, which inhibits its formation to a great extent, but does not altogether prevent it. With perfectly pure chloroform there is no coughing or oppression of any kind. A small quantity of carbonyl chloride irritates the bronchial tubes, and frequently causes nausea. The inhalation of chloroform is by far the most delicate test of the purity of the product.

Ramsay has investigated a large number of samples of chloroform from different makers. In some there was a very small quantity of carbon tetrachloride and some chlorinated products. These impurities, however, were insignificant in quantity and did not affect the safety of the chloroform. He exhibited some recently prepared chloroform made from chloral, which was free from carbonyl chloride. When inhaled, this chloroform did not cause the slightest irritation of the throat. Carbonyl chloride is produced by the action of light upon chloroform, and he thinks that much of the nausea and impairment of respiration is due to this substance. It may be entirely gotten rid of by treating chloroform a few hours before it is used with a small quantity of slaked lime. This has the effect of

making the chloroform slightly turbid, but does not alter its value or safety as an anesthetic. For the past three years Dr. Newman, of Glasgow, has been using chloroform prepared in this way, and he gives a table of results:

Time under Chloroform.	Sickness.				Trouble.			
	During.		After.		During.		After.	
	O. Per ct.	N. Per ct.	O. Per ct.	N. Per ct.	O. Per ct.	N. Per ct.	O. Per ct.	N. Per ct.
Under 15 minutes	21	8	43	19	11	0	4	0
Under 30 minutes	27.5	7	51	18	13	7	5	0
Under 45 minutes	29	8	62	21	12	8	7	3
Under 60 minutes	31.5	10	78	18	14	7	5	2
Under 75 minutes	30	10	78	18	13	6	9	3
Under 90 minutes	36	12.5	81	22	15	5	11	4
Over 90 minutes	36	11	77	26	14	8	9	2
Average	30	9.5	67	20.3	13	6	7	2

Those marked "O" give in percentage the cases in which chloroform prepared from pure alcohol was used, and those marked "N" give the cases in which the same chloroform was used after being treated with slaked lime. The lessened frequency of complications with the neutralized product is significant.

Ether tends to acquire a "sharp" smell, and when breathed to produce uncomfortable effects. On evaporation there is left a sticky residue, which shows the reaction of hydrogen peroxide. To purify ether, distillation does not suffice. He has found that the best way is to add a few drops of mercury and to shake well. The mercury then becomes coated with a black powder, probably oxide, and the sharp feeling of the ether disappears. Pure ether does not tarnish mercury. Ether thus treated can be used without producing disagreeable effects. It might be equally good to use binoxide of manganese instead of mercury, but Ramsay has never tried it. The only objection would be that the manganese would dirty the inhaler. Neither mercury nor manganese peroxide is volatile, hence no fear need be felt of producing harm by using ether for anesthetic purposes from which the finely divided mercury or dioxide has not settled.

A Plastic Operation for Hemorrhoids.—

At the February 1 meeting of the Chicago Medical Society Henry T. Byford described an operation for this condition which he had been performing for several years. It differs somewhat from operations heretofore described, in resembling more nearly that reported

by Schiff in the *Medical Record* of December 31, 1898 (MEDICINE, February, 1899).

The operation described by Byford is essentially plastic; he first determines how much tissue it is necessary to remove by clamping all tumors with lock forceps. This enables him to estimate closely how much tissue will remain after the removal of the tumors. Incision is usually made across the sphincter muscle and includes a certain amount of skin and mucous membrane. This plan of making the incision necessarily removes some tissue and so tends to narrow the anal aperture. In those cases involving a somewhat extended dissection, the incisions are made obliquely in this way; when sutured the defect is supplied by mucous membrane from above and skin from below.

Byford uses what he describes as a mattress suture, invariably employing silkworm-gut. The needle is passed deeply into the tissues parallel with the cut edge and brought out on the same side of the wound; it is then passed into the tissues on the opposite side of the wound parallel to the cut surface and brought out on the same side opposite the point of entrance. The ends are then tied and the severed tissues are brought accurately in contact. The sutures used in this way do not transverse the cut surface, and he claims for this method a freedom from infection, providing ordinary care is used in the after-treatment.

Removal of the Transverse Colon, Partial Resection of the Pancreas and Greater Curvature of the Stomach, for Carcinoma.—

A. Schyzer reports in the *Northwestern Lancet* of January 15, 1899, a novel operation, which he thinks is the only one on record, of the entire removal of the transverse colon, and it is exceptional in the fact that it involved suture of the mesenteric veins.

A carcinoma involving the whole transverse colon, and including the gastrocolic ligament as well as reaching to the base of the mesocolon, was removed. In dividing the base of the mesocolon the inferior mesenteric vein was opened to the left of the duodeno-jejunal fossa and sewed up laterally. The superior mesenteric vein was also opened to the extent of over one centimeter at a point just before emerging under the head of the pancreas. Severe hemorrhage followed, though immediate and effective compression was made.

The greater curvature of the stomach was resected for a distance of seven centimeters. In removing the deepest part of the tumor the division line had to go partly through the superficial layers

of the pancreas. In and under the head of the pancreas an area of infiltrated tissue had to be left behind and was sewed over. The hepatic flexure was united to the splenic flexure by an end-to-end anastomosis with silk suture.

The carcinoma was twice the size of a man's fist. With the tumor, a large piece of healthy colon had to be removed on account of the tumor growing into the mesocolon. The whole omentum was sacrificed.

The operation was performed October 16, 1898. After a somewhat eventful recovery the patient left the hospital on November 29 in a very much improved condition, having a very good appetite, feeling stronger every way, with a gain of eleven pounds. A month later he was reported well.

The Hot Bath in Surgery.—

T. P. Satterwhite, in the *Medical Age* of January 25, 1899, again directs attention to the hot bath in the treatment of crushed, lacerated, and contused wounds, and in severe burns and complications following such injuries. He uses hot water which has been sterilized, to which antiseptics may be added. The water is changed every three or four hours, and this can usually be done without disturbing the part immersed.

The water support to an inflamed and tender limb, which needs redressing several times a day, greatly lessens suffering. Inflammation quickly disappears, and he claims by this method to have saved a number of extremities which would otherwise have been sacrificed. The danger of general infection is lessened, necrotic tissue is gotten rid of, and tissue that has any vitality is saved. It is the only painless way of removing clots and foreign substances, together with microorganisms. The temperature of the water is kept night and day between 135° and 150° F., being gradually raised to this maximum by a coal-oil stove. The heat acts as a hemostatic and a stimulant and supplies the heat lost by bleeding and traumatic shock.

The method is found especially useful in railroad and factory injuries, where the wound cannot be thoroughly cleansed. The wound is sterilized and cellular activity stimulated.

The author finds that the value of hot water is so great that it is surprising that every hospital does not provide accommodations for treating patients by this method. Extensive burns alone, he thinks, are common enough to justify preparation for their management in this way. He thinks the bath meets the chief indications of modern surgery, namely, cleanliness and drainage.

THERAPEUTICS.

Schott Treatment in Chronic Heart Disease.—

Elsworth Smith, Jr., contributes to the *Journal of the American Medical Association* of January 28, 1899, a *résumé* of this method of treatment. The Schott treatment is steadily gaining in professional favor, and has been adopted by some of the advanced students of this class of diseases.

Smith reports seven cases in which the treatment was employed; in one there was recovery, and the remaining six died. Of these latter, there was marked improvement in two, improvement in two, and no gain in two. Most of these cases were very unfavorable for treatment.

We reproduce the history of the case which is set down as recovered, and give a table showing the effects of the baths in this case.

A woman, aged 17 years. Seen January 30, 1898. Heart symptoms since an attack of intermittent fever in 1891, which symptoms were aggravated by an attack of rheumatism of one month's duration in 1896. She entered the hospital about January 10, 1898, since which time she had been growing worse in spite of appropriate treatment, until her condition had become most pitiable. Edema of lower extremities very great. Had sinking spells in which she was every moment expected to expire; could not leave her chair day or night. There was mitral regurgitation, with complete failure of compensation, and anemia. Baths and later on movements, from February 1 to March 15—twenty-two baths in all. After second bath, on February 4, she spent a better night than she had since entering the hospital. February 10 she slept well from 10 P.M. till 5 A.M.; February 15, was sleeping from seven to eight hours without awaking. February 28 she had been sleeping all night and eating well. Could now get about the wards and halls. March 16 the patient menstruated, the first time in two years. Pulse was reduced from 140 February 4 to 70 February 15; respiration, from 42 to 20 in the same time; apex beat, from 5¼ to 3¼ inches from middle line. Urine increased from 26 ounces on February 4 to 53 ounces February 13. Disappearance of edema. On leaving the hospital patient was entirely free from symptoms.

Date, 1898.	Bath temperature.	Bath number.	Time.		Before.		First half.		Second half.		Immediately after.		Ten minutes after.		Point of maximum impulse in inches.			Urine in 24 hours.	
			Beginning.	End.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Respiration.	Pulse.	Before.	During.	After.	Amount.	Specific gravity.
Feb. 1	98°	1	3:15	3:21	30	130	44	138	40	138	34	136	28	132	5¼	4¼	4¼	26½	1020
Feb. 4*	96°	1	2:50	2:57	37	118	42	140	42	124	48	128	44	128	5¼	4½	.....	26	1020
Feb. 7†	98°	1	2:42	2:49	23	105	32	126	36	114	...	.....	20	110	4¼	4	4	28	1025
Feb. 9	92°	1	3:36	3:45	24	110	28	110	32	116	26	112	20	108	4½	.....	4¼	14	1025
Feb. 11‡	92°	1	2:46	2:55	14	110	30	122	24	118	16	114	17	110	4⅛	4	4	28	1030
Feb. 14‖	92°	1	3:20	3:28	15	114	22	120	22	120	18	116	...	.....	4¼	4¼	4¼	42	1010
Feb. 17§	.....	...	3:03	3:14	18	116	...	.....	22	122	20	122	19	112	4½	4½	4¼	38	1010
Feb. 21	90°	2	3:01	3:14	18	110	...	.....	22	111	20	111	19	108	4	4	4	42	1012
Feb. 24	88°	2	2:59	3:15	26	85	...	.....	23	98	26	105	24	98	3⅝	3⅝	3⅝	48	1010
Feb. 28	90°	2	4:08	4:24	20	98	28	100	28	104	23	92	20	94	4	4	4	43	1010
March 3	88°	2	2:15	2:31	22	100	23	97	25	98	21	93	...	.....	3¾	.....	.....	35	1012
March 7	88°	2	4:46	5:04	22	88	20	88	15	96	20	91	22	88	3¾	3¾	3¾	...	.....
March 9¶	88°	2	3:01	3:19	24	98	21	93	22	98	23	91	22	88	3¾	3⅔	3⅔	40	1010
March 12**	88°	2	2:56	3:14	20	89	22	87	22	90	20	85	20	82	3¾	3¾	3¾	45	1012
March 19	90°	2	1:40	1:58	22	82	24	85	22	90	21	74	21	88	.....	3¾	3¾	...	.....
March 21††	89°	2	3:04	3:22	18	91	22	97	19	93	19	90	20	80	3¾	3¾	3¾	...	.....

*Best night since entering hospital.
†Can rest comfortably in recumbent posture.
‡Patient asleep ten minutes after bath.
‖Slept well from 8 P.M. to 5 A.M.
§Now only slight edema over tibiæ.
¶Pulse regular.
**Digitalis stopped, owing to symptoms of gastric irritation.
††Apex beat well defined; relative dulness at mammary line; entirely free of symptoms.

These baths can be prepared artificially, and are generally employed in the following six strengths:

Bath No. 1: Sodii chloridi 4 pounds, cal. chloridi 6 ounces.

Bath No. 2: Sodii chloridi 5 pounds, cal. chloridi 8 ounces.

Bath No. 3: Sodii chloridi 6 pounds, cal. chloridi 10 ounces, sodii bicarb. 6 ounces, HCl 7 ounces.

Bath No. 4: Sodii chloridi 7 pounds, cal. chloridi 10 ounces, sodii bicarb. 8 ounces, HCl 12 ounces.

Bath No. 5: Sodii chloridi 9 pounds, cal. chloridi 11 ounces, sodii bicarb. 1 pound, HCl 1 pound.

Bath No 6: Sodii chloridi 11 pounds, cal. chloridi 12 ounces, sodii bicarb. 1 pound, HCl 2 pounds.

To the foregoing different strengths are added forty gallons of water. The bath is to be given every other day, preferably in the morning, when the stomach is most apt not to be full.

No 1 is given as long as there is any improvement. Should the case come to a standstill, or begin to lose ground, or if after three or four baths of No. 1 there should be no improvement, then the next strength should be tried, and so on up to the third and fourth. The last two strengths, however, are rarely used. The temperature of the first bath should be about 96° F., decreased every third bath from one to three degrees down to 82 degrees. The patient remains in the first bath five minutes, increasing two minutes every second or third bath until twenty or thirty minutes is reached.

If, during the course of the treatment, the patient should grow steadily worse, or if after fifty baths there should be no improvement, the treatment should be stopped. The patient should be carefully watched during the entire bath, and upon the appearance of any great increase of dyspnea or cyanosis, should be removed from the tub immediately, well rubbed, and given some diffusible stimulant. A cup of hot milk, cocoa, or bouillon should be administered before and after the bath. After the bath the patient should be put to bed for an hour or two of rest. Ordinarily the effect of the bath is grateful. Respiration and pulse improve, and after leaving the tub the patient generally feels inclined to sleep. On alternate days the resistant movements, as introduced first by Schott, are administered. They are nineteen in number and involve all the larger muscles of the body. They consist of slow movements executed by the patient and gently resisted by the operator. The movements are divided into different groups, for arms, legs, trunk, hands, feet, etc. At first only a few of these movements are given, which are to be afterward carefully increased according to the patient's ability to

stand them. These exercises train the heart muscles, cause more blood to pass through the muscular arteries and thereby help the circulation of blood away from the heart, favor the venous current toward the heart, and improve general nutrition. In their administration, however, they must never cause any undue fatigue.

The baths and exercises are indicated in every case where there is failure of cardiac compensation, whether the result of valvular diseases, lesions of the kidney, or primary affections of the myocardium. They seem to accomplish most in cases of mitral regurgitation; less in aortic cases and in the hearts of renal lesions. Selected cases of the latter class may be benefited.

Medical Treatment of Appendicitis.—

H. B. Allyn, in the *Therapeutic Gazette* of January 15, 1899, says that in common with the great majority of physicians he was taught to use opium in appendicitis for the purpose of lessening peristalsis and controlling pain. Since discarding opium his cases have caused less anxiety, as there has been less pain, less fever, less tympany and vomiting, and the duration of the illness has been on the average shortened.

During the past three years Allyn has treated fifteen cases of appendicitis in private practice, all of whom have recovered without operation.

The patients were all put to bed and kept as quiet as circumstances and the domestic conditions permitted. All food was withheld for twenty-four or forty-eight hours—even water was given sparingly. A saturated solution of Epsom salt in peppermint water was given in teaspoonful doses, once in three hours, until one or two movements of the bowels were obtained in twenty-four hours. In a few instances half an ounce or an ounce of castor oil was given at the beginning of an attack. When the stomach was too irritable to retain the Epsom salts, calomel was given in divided doses until there were one or two movements of the bowels. Occasionally he found citrate of magnesia preferable. No opiates were employed, and in nearly every instance pain subsided when once the bowels had been freely moved and food was not taken. In rare instances codeine was given after the bowels had been moved, but he is not sure that its effects were less depressing or objectionable than those of morphine. When the patient began to eat food was given cautiously: a tablespoonful of milk and lime-water, or, what is preferable, a small quantity of beef juice or some animal broth, once in two or three hours. Pain usually ceases soon after the treatment is

begun, but he has found local measures, such as turpentine stupes and the hot-water bag, of use in overcoming this symptom. He agrees with the more modern view in this disease that opiates are to be avoided, as they increase the symptoms, but a more important contraindication he finds in their tendency to aggravate any toxemia that may exist and thus to increase tympany, vomiting, and fever.

The fear that laxatives in this disorder may occasion perforation is not without foundation, but Allyn believes that this fear is often exaggerated. In considering too exclusively the possibility of perforation, physicians have failed to note that appendicitis in most instances is not primary, but results from, or is a part of, catarrh of the colon. An overdistended appendix will open itself most always after the colon itself is empty. Again, the nausea, tympany, chills, and fever are not, in the great majority of cases, the result of general or local inflammation, but are toxic symptoms, due to absorption into the general circulation of certain poisons produced at the seat of inflammation or in the neighboring intestine. Purgation is not necessary. If the patient is constipated when first seen, an enema may be given.

In speaking of the medical treatment of appendicitis, the author does not wish to be understood as implying that the services of a surgeon are not needed. Many cases are surgical from the beginning. The result of medical treatment, in his judgment, is doubtful, if within the first twenty-four hours after the patient is seen, or after the bowels have been sufficiently moved, there has not been a decided improvement in pain, vomiting, and fever.

The Cold Bath in Typhoid Fever.—

The growing tendency to a modification of the Brand method of treating typhoid fever is combated in very vigorous language by James T. Whittaker (*New York Medical Journal*, Jan. 14, 1899). He says we have no real substitute, and we can ask for nothing better if it is adopted rigidly from the start. The baths should be given at a temperature of from 68° to 70° F. He says that all patients are benefited by the treatment, and it is only exceptionally that one complains. The cold bath strengthens the heart and eliminates typhotoxin from the kidneys. As soon as a diagnosis of typhoid is made the patient should be put to bed and receive cold baths systematically whenever the temperature reaches 102°. The mortality is reduced by this means from 14 to 7 per cent, and the liability to hemorrhage and perforation is reduced one-half. A good

deal depends upon the time when the treatment is begun. Of thirty-two cases treated before the fifth day there was a loss of but one, or 3.4 per cent; of seventy-eight treated before the tenth day there was a loss of six, or 7.7 per cent; of eighteen cases receiving the treatment after the tenth day, there was a loss of four, or 22 per cent.

The writer says that it is not always practicable to give the cold bath; there are cases in which the patient, or the friends of the patient, absolutely refuse the bath. He says much will depend upon the conviction of the physician; he may insist and have it done, or he may compromise and have it done imperfectly, or he may compromise still further and give a cold sponge or antipyretics. Like all compromises, they do not give ideal results and fail to save some individuals who would have been saved by the cold bath. He closes with the following vigorous language: "A medical friend of mine said to me on the street, 'There is a growing tendency to abstain from the cold bath.' Certainly there is; these tendencies are always present; the *laissez aller* is always easier than the *laissez faire*. The question of the treatment of typhoid resolves itself with many others into the right and the expedient. The right treatment insists upon the use of cold baths; the expedient substitutes them. This treatment reaches deeper than typhoid fever; it is a matter of the construction of individuals who practice medicine. I would say, if it were not for the fear of misconstruction, it is a question of character."

F. E. Hare, in the *British Medical Journal* of December 17, 1898, on the same subject, claims that the selection of suitable cases for the cold-bath treatment is out of the question; that the routine application of the baths reduces the mortality 50 per cent; and that the paroxysmal state and the intestinal conditions are relieved to an extent not reached by any other treatment.

Variation in the Strength of Drugs.—

Warren B. Hill, in the *Therapeutic Gazette* of January 15, 1899, has a very instructive though short article devoted to this subject, published under the title "Medical Skepticism." He finds that much of this is due to a variation in the strength of the drugs which are employed. He claims that thousands of pounds of ergot are annually placed upon the market which have little or no therapeutic value. He states that Dr. Houghton, out of an analysis of eighteen samples of strophanthus on the market, found some three times the

strength of others. Of all the important drugs of the materia medica, cannabis indica is one of the most variable. In this latter drug it is impossible to make a chemical assay because the active principle of hemp is a resin, and it contains other resins which are inert and inseparable from the active one.

These are a few of the difficulties in the way of procuring physiologically active drugs, and if we cannot prescribe with precision, then we are prone to become skeptical. There is often such a variation in the activity of glucosides that one sample of strophanthin was found to possess ninety times the activity of another.

The remedy for this state of affairs lies in the revision of pharmaceutical methods. It is possible to have physiologically active drugs; those whose activity is represented by chemical compounds which may be analyzed should be assayed, and the physician should procure such preparations or use the alkaloid itself. Those whose activity depends on unstable compounds should be tested physiologically before being placed upon the market.

The practice of using animals to test the physiological action of drugs is not a new one, but for the most part it has been qualitatively employed. Hill thinks that the quantitative tests employed in determining the strength of antitoxin could be employed in drugs which are not amenable to chemical analysis.

An Improved Blaud's Pill.—

J. W. England, in the *Philadelphia Medical Journal* of January 28, 1899, gives some of the chemical and pharmacological objections to this pill, as commonly made. Some years ago he prepared for the Philadelphia Hospital a formula that has been found satisfactory. Each pill, or rather capsule, which he regards as the preferable form of administration, contains three grains of mass of ferrous carbonate, two grains potassium sulphate, and one-third grain of potassium carbonate, with sufficient althea and acacia to make a mass. The capsules weigh a little over five grains each, are of medium size, and keep for months. The formula recommended is:

Mass of ferrous carbonate	36 grains.
Potassium sulphate	34 grains.
Potassium carbonate	4 grains.
Powdered althea	1 grain.
Powdered acacia, quantity sufficient to make 12 pills, or No. 4 gelatin capsules.	

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Hypertrophy of the Thymus Gland (Status Lymphaticus).—

Under the terms "thymic asthma" and "status lymphaticus" there have been described cases of rapidly developing dyspnea in children, sometimes followed by death. The cases are of deep interest from the fact that this condition may be developed from trivial causes, such as a trifling surgical procedure or a hypodermic injection. G. P. Dixon, in the *Australasian Medical Gazette* of December 20, 1898, describes the case of a child who was seen at six o'clock in the evening. At 2 P.M. of that day he suddenly became unconscious from some unknown cause. There was no history of convulsions nor was there a rash, but the relatives stated that the child was habitually short-winded and often got blue in the face. For years he had suffered from a slight cough.

When seen the temperature was 103°, pulse 164, and respiration 60. There was extreme cyanosis, but no stridor and no recession of intercostal spaces. The heart's action was tumultuous and the radial pulse weak. The finger-tips were blue, not clubbed, and the face and lips dusky. The child was in a stupor from which he could not be roused. The reflexes were present, and there was no paralysis or rigidity. The pupils were dilated and equal. There was a short, frequent, husky cough.

The heart's impulse was diffuse; pulsation could be seen over the auricular areas, as well as in the epigastrium. The first sound was muffled, but no murmur could be heard over either apex or base; second sound normal. The cardiac dulness was increased in all directions, and continuous, with an area of impaired resonance over the manubrium, sterni, and left apex. Over this area the breath sounds were weak, but there was no bronchial breathing. A loud systolic blowing bruit could be heard all over the left chest behind. It was not noticeable in front.

Strychnine hypodermically and inhalations of oxygen improved the color slightly. He became partially conscious and could move his limbs. He resented percussion over the precordia, but did not speak. About six hours after admission he suddenly became livid and the heart stopped.

At the autopsy all the internal organs were deeply congested; no hemorrhages. The lungs, brain, and abdominal viscera were quite healthy. The heart cavities were distended with dark blood-clots. A little colorless fibrin was present in the right auricle. There was

no evidence of valvular mischief, and the aortic valves were competent.

In the thymus region was a lobulated mass, having the naked-eye appearance of thymus tissue, and extending from the root of the neck to the front of the pericardium, to which it was attached. This mass completely filled the superior mediastinum and made pressure upon the arch of the aorta and other vessels. There was no evidence of pressure atrophy, or other disease of aorta, pulmonary artery, or trachea.

The Diagnosis of Extra-uterine Pregnancy.—

The importance of the early diagnosis of this condition cannot be overestimated; the sooner the diagnosis is reached the greater the chances of a successful operation. J. W. Taylor, in the *British Gynecological Journal*, has an exceedingly valuable paper upon this subject. It is based on a study of thirty-seven cases, in which a correct diagnosis was made in twenty-seven; tubal disease was thought to exist in three, myoma in two, and ovarian cyst in four. The elements upon which a correct diagnosis is based are given as follows:

(1) A patient within the child-bearing limits of age and one in whom pregnancy is possible. (2) She has recently been in good health. (3) It is more likely than not that several years have passed since her last pregnancy. (4) There is a history of some amenorrhea, accompanied or followed by (5) irregular uterine hemorrhage, occasionally profuse and red, but generally dark in color, moderate in amount, and persistent in its course; (6) with this there may be the history of the passage of some membrane, either in one pouch or bag as a "complete decidua," or in two pieces or in shreds. (7) On examination, pulsating vessels may be felt in the vaginal vault on one side of the uterus. (8) On this side also, and closely investing the back of the uterus, there is nearly always a tubal tumor (this may have an exceptional situation). (9) The tumor enlarges markedly and suddenly by recurrent hemorrhages and by the formation of a hematocele directly continuous with the original tumor. (10) These hemorrhages are signalized by sudden spasms of severe abdominal pain and by transient attacks of peritonitis. (11) The uterus is displaced by the hematocele, at first backward, afterward to the opposite side of the pelvis, and sometimes forward, against the pubes (it is rare for the uterus to be permanently displaced downward), and (12) the uterus throughout, although slightly enlarged, is empty.

Relation of Pelvic Disorder to Mental Disease.—

C. K. Clark, medical superintendent of the Hospital for the Insane, Rockwood, Kingston, Ontario (*Albany Medical Annals*, January, 1899), states that for some time in that Province a war has been waged on the subject of gynecological operations as a cure for insanity. The enthusiasts, on one side, claim that practically all insane women have pelvic disease; the opponents of this theory insist that pelvic disease is an unimportant factor in the development of insanity. His experience has been that it exists in a small proportion of patients, and of those in whom it does exist a majority do not require surgical aid. In those upon whom he has operated surgical results have been excellent, but the result on the mental condition has been generally disappointing and in some instances harmful. Pelvic disease no doubt accounts for a small proportion of cases of insanity, and when it exists should receive appropriate treatment.

Clark quotes with approval the conclusions set forth in an editorial in the *Journal of Mental Science* for July, 1897: "We have nothing to say against operations of any kind being performed on the insane, for just the same reasons that make operations on the sane advisable or necessary, but we protest against the removal of uterine appendages for any other reason. The day of indirect treatment for mental and moral deficiencies by heroic operations has gone by. Attempts in this direction have been made from time to time, but comprehensive psychology and good sense have hitherto triumphed and will continue to do so."

Hydrogen Peroxide in the Treatment of Puerperal Sepsis.—

John N. Upshur, in *Gaillard's Medical Journal* for January, 1899, states that in this method of treatment in these cases he first irrigates the interior of the uterus with normal salt solution, removes secundines or other retained foreign materials with the sharp curette, and again freely irrigates with salt solution. After thoroughly drying with aseptic cotton or gauze, hydrogen peroxide is applied to the uterine cavity by means of a small intrauterine syringe, or an applicator upon which is wound a piece of aseptic gauze or absorbent cotton saturated with the agent. Froth is removed and fresh applications made until the cessation of foaming gives positive evidence that the uterine cavity has been freely cleansed. This procedure is practiced daily until the temperature remains normal. His experience has been that this occurs within a week.

The rationale of the treatment by hydrogen peroxide is that this agent causes a rapid oxidation or superoxidation of effete organic matter, thus completing in a very short time what it would take the unassisted efforts of Nature a dangerously long period to accomplish. The advantage of this agent over mercuric chloride, carbolic acid, and other agents that act chemically is that it is non-corrosive and does not destroy healthy tissue. The results obtained from the use of hydrogen peroxide are vastly superior to those obtained by the use of any other agent. He now approaches the treatment of puerperal sepsis with less fear of unfortunate results than he has ever before experienced.

FORENSIC MEDICINE.

Rights of the Expert Witness.—

A decision filed December 23, 1898, in the Branch Appellate Court, First District, Illinois, sustains Dr. Denslow Lewis in an appeal from a decision in the Circuit Court.

Dr. Lewis brought suit in a justice court against one Emlin S. Blye, for services in assisting counsel in preparing a case for trial and for appearing in court at her request, to assist in the examination of expert witnesses, if such should be produced. In the justice court the Doctor recovered a verdict of $100, which was appealed to the Circuit Court; this reversed the finding of the justice court and recorded a verdict in favor of Dr. Lewis for $2.20, being the statutory fees for two days' attendance and mileage.

That the importance of this decision may be shown, it is necessary to refer briefly to what is known as the Dixon decision. In January, 1895, Dr. J. W. Dixon, of Sangamon county, Illinois, was brought into court on a subpœna and asked a hypothetical question, which he refused to answer, "on the ground that an expert witness is entitled to a different and greater compensation than an ordinary witness is allowed, and that an expert is not required to give expert testimony without compensation as an expert, unless a reasonable compensation shall have been paid, or provided for."

Both the Appellate and Supreme Courts refused to sustain the contention of the physician that his skill and experience was property within the meaning of the law, and decided that an expert witness must give his opinion for the statutory fees.

Great credit is due Dr. Dixon for the spirited manner in which the litigation was carried on. In the suit of Dr. Lewis, the Dixon decision was relied upon as settling matters relating to fees for

medical testimony, and that the statutory fee must cover the claim of every kind that a medical witness could possibly make under any circumstances, in any case, a view adopted by the judge who decided the case.

The chief points of difference between the Dixon case and those relied upon by Dr. Lewis in his contention were that in the Dixon case the witness attended in person, on a subpœna, while he attended upon the request of one of the parties to the suit.

In the Dixon case the one service which the expert was called upon to render was to answer the questions asked of him as a witness upon the stand. In the Lewis case preliminary preparation was required, there was conference with counsel, and advice given for the presentation of his evidence to the court of justice.

The Appellate Court, in reversing and remanding the case, held that the question before the trial court was different from that which was decided in the Dixon case. That portion of the Dixon decision bearing on the question is quoted, namely: "A physician or surgeon cannot be punished for refusing to make a post-mortem examination, unless paid therefor, nor can he be required to prepare himself in advance for testifying in court by making an examination or performing an operation, or resorting to a certain amount of study, without being paid therefor."

The Appellate Court then says: "It follows that if a physician, at the request of a party to his suit, performs any such extra services, it is entirely proper and legal to receive payment therefor, or to make an agreement whereby he is to receive such payment. The agreement which it is contended was made by the parties to this suit did not provide for payment to appellant for 'his services in testifying as an expert.'"

We see no reason why appellant might not make a valid and binding contract with appellee, whereby he was to be compensated for his services in conferring with her attorneys at her request and in appearing in court the second day, for the purpose stated, also at her request.

The importance of the decision in the Lewis case cannot be overestimated. It practically nullifies the Dixon decision so far as the compensation of expert witnesses is concerned. If a court holds that preparation made for the purpose of testifying is a proper subject of contract, then practically all expert testimony must be paid for. It will certainly be rare for a witness to be brought into court on an ordinary subpœna, without any previous knowledge of the case, and his opinion required. The value of medical opinions depends almost wholly on the skill with which they have been pre-

pared. An opinion which involves no study, preparation, or thought is probably worth little more than the statutory witness fee of one dollar and mileage.

Legal Definitions of "Doctor," "Physician," and "Surgeon."—

In the January issue of MEDICINE we gave a definition of what constituted the practice of medicine, quoting the decision of a Kentucky court, which gave a succinct and definite statement.

Arthur N. Taylor, LL.B., in the *New York Medical Journal* of January 28, 1899, in a series of articles on the law in its relations to physicians, gives a synopsis of the legal decisions bearing upon the terms doctor, physician, and surgeon. The meaning of the term doctor, or physician and surgeon, as used in the law, is not confined to any particular school or schools, but is considered in the broad sense of one who professes the art of healing. Justice Daly said: "The legal signification of the term doctor is simply a practitioner of physic. The system pursued by the practitioner is immaterial. The law has nothing to do with the merits of particular systems. Their relative merits must become the subject of inquiry when the skill or ability of a practitioner in any given case is to be passed upon as a matter of fact."

The Supreme Court of Wisconsin, thirty years later, following the reasoning of this decision, held that a statute providing for the organization of a county medical society included as well the organization of homeopathists as of any other school.

The question of whether one who "practices bone-setting, and reducing sprains, swellings, and contractions of the sinews, by friction and fomentation," is a practitioner of medicine and surgery, was considered in the Supreme Court of Massachusetts in 1835. While such a practice does not amount to a general exercise of the functions of the science of either medicine or surgery, it forms an important part of the practice of surgery and renders the practitioner amenable to the laws affecting the physician and surgeon; also one who gave electric treatment was held to be engaged in the practice of medicine and surgery. The court said: "It is quite unnecessary, we think, that in order to practice medicine within the meaning of the statute the practitioner should give internal remedies." The services of a clairvoyant are within the meaning of the term "medical or surgical services."

The law of Illinois in force in 1887 provided that "no person shall practice medicine in any of its departments in this State without the qualifications required by this act." The question arose whether or not this included midwifery. The court was of the

opinion that obstetrics was an important department of medicine, and that it was included within the terms of the statute.

The Supreme Court of Nebraska, in an opinion rendered in 1894, held that a Christian Scientist, in the exercise of his practice, came within the statute which provides that any person shall be considered as practicing medicine "who shall operate on, profess to heal, or prescribe for, or otherwise treat any physical or mental ailment of another."

In a more recent case, arising in Rhode Island, the court held that the term "practice of medicine" as used in their statutes must be understood in the ordinary or popular sense of determining the physical condition of the patient and treating his disease or injury by ordinary or material remedies, and that it could not be construed to include in its meaning the treatment of the Christian Scientist, which takes account neither of physical symptoms and conditions of the patient nor of the application of remedial substances.

While several of these decisions were based upon the wording of particular statutes, it may be laid down as a general rule that the term doctor, physician, and surgeon, or practitioner of medicine and surgery, as legally used, is broad enough to include all those who profess and practice the art of healing in its several branches.

It is interesting to note how far words may depart from their original meaning. "Doctor" originally was applied to a teacher, and at the present time the university degrees recognize no other use of the word. Quoting from one of the decisions cited above, Justice Daly says: "The legal signification of the term doctor is simply a practitioner of physic." It will be with regret that the doctors of law and divinity thus see their titles ruthlessly swept away, or if they retain them are perforce carried into the ranks of the medical profession.

These various citations serve to show how difficult it is to define the best known and simplest thing.

Christian Science and the Law.—

Dr. Frank S. Billings discusses a case of the responsibility of the Christian Science healer under the law in the *New York Times* of January 6, 1899. The text for his remarks was supplied by a decision of the Court of Common Pleas of Ohio, which decided that a Christian Science healer had not the responsibility, in regard to the treatment of the sick, that the law imposes on all other practitioners of medicine. The learned judge of this court in Cincinnati held that the rites the Christian Science healer performed were religious and not medical, and therefore not within the State

medical law under which she was prosecuted. He says it is unfortunate that one cannot tell whether the legal objections were simply a technical evasion of the law, so disgracefully common in this country, or that the law did not cover the case in point. From the general character of the case and the remarks of the judge, there seems no doubt that the Christian Scientist would have been guilty of malpractice, in plain English professional murder, had she been either an ordinary charlatan or a regular medical practitioner. She escaped because the court held that the rites (practice) she performed were religious and not medical. This decision is based on the law guaranteeing the free right to religious opinions, but the learned judge seems to be entirely unaware that that law has reference to opinions and theories as to the existence of God alone, and in reality has no reference to rites or actions, which is an entirely different question. Under our laws a Hindu could come to this country and freely utter the opinions of his religion and perform many of its rites, but would our law, protecting freedom of religion, permit the widow of such a Hindu to ascend the funeral pyre of her husband and sacrifice her life, through obeying one of the holiest rites and moral obligations of her religion? Suppose the Christian Scientists, or some other new sect, should claim to be "Abrahamites," and maintain that child sacrifice was their holiest rite (it is quite possible; nothing in this line seems too absurd to flourish in this country of free and glorious license to ignorance), and put it in practice, would that not be a religious rite, according to the learned judge of Cincinnati? Such absurdities as that are exactly similar to the rites of the Christian Scientists. They come under criminal and not civil law.

Billings describes a recent case, one of several that have come to his knowledge: "Mrs. —— was the wife of a clerk. Her mother was a maniacal Christian Scientist. When it came time for Mrs. —— to be confined, the husband was told he might go to his business, and the mother (mother-in-law) took the case in hand, aided by a Christian Science healer. The poor girl began to suffer, and the woman put a Bible on her abdomen and told her that her pains were all imagination, that the Lord never gave people pain, and so on *ad nauseam*. The agonies of that poor child must have been terrific, for neighbors heard her screaming and begging for a physician, but these Christian fiends never let up. Finally the pain stopped; no further screaming was heard. The reason was that the child had ruptured the womb and was in the abdominal cavity of the mother. Then there was rushing in mad haste. The husband was sent for; the physician was sent for. But too late! The woman died of hem-

orrhage and the child choked to death. Two murders! But were these women prosecuted? Not a bit of it! Public sentiment was entirely on their side, and no official dared to issue a warrant. 'It was God's will to take his dear ones that way,' said the minister (not a Christian Scientist) at the funeral."

What is Death from Poisoning?—

Is a death from poison, accidentally taken under the mistaken belief that it is a harmless medicine, a death by poisoning? (*Journal of the American Medical Association*, Jan. 21, 1899.)

This question the United States Circuit Court of Appeals had before it in the recent case of McGlother *vs.* The Provident Mutual Accident Company of Philadelphia. Dr. McGlother died a few months after taking out a policy of accident insurance, and an action was brought to recover thereon for his death, which was caused by drinking poison under the mistaken belief that it was a harmless medicine. The policy excluded death from poisoning. The court in its decision says: "If death from poison taken under the belief that it is not poison is not a death from poison, what is it a death from? The whole is greater than any of its parts and includes them all. Death from poison is greater than, and necessarily includes, death from poison taken in any particular way, because it includes death from poison taken in every way. It includes death from poison taken intentionally or unintentionally, consciously or unconsciously, voluntarily or involuntarily, with or without knowledge that the draught is dangerous, because every species of death from poison is included within the generic term." In accordance with this and much else it has to say upon the subject, the court held that the death referred to fell within the exception expressed in the policy, and that the insurance company was not liable for it under its contract.

[One is surprised that so obvious a distinction as the foregoing should ever reach a court of appeals. It is, however, a sample of much of the litigation in accident insurance.]

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

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ORIGINAL ARTICLES.

INFECTIOUS JAUNDICE.

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The importance of the liver in the animal economy has always been sufficiently recognized. Its great size, in proportion to the other glandular structures of the body, was alone sufficient warrant for the conclusion that its offices were of great consequence. It was for a long time supposed that its most important function was the part played in the processes of digestion. With the development of our knowledge in physiology, however, the fact was soon established that while the bile does aid in the emulsification of fats, it has no action at all upon the nitrogenized food-elements, or upon carbohydrates. The part played by the bile in the digestion of food is small and comparatively unimportant. More important are its assimilative functions, in the discharge of which it modifies nearly every product of digestion brought to it from the gastrointestinal canal by the portal blood. It acts upon, modifies, and changes such secondary substances as leucin, tyrosin, lysin, lysantonin, etc., which are brought to it from the intestinal canal, transforming them into urea, possibly, in the case of the amido-acids, converting them into other and more complex substances. The glycogenic function of the liver is a part of its assimilative functions.

This organ, a sentinel at the portals of the general circulation, prevents the introduction into the body of deleterious substances. The fact has long been commonly known that most drugs administered by the stomach are demanded in larger doses than when administered hypodermically, and the reason of this is, in part, that

in passing through the liver the active principle of the drug is partly neutralized. This is particularly true of such vegetable poisons as morphine, strychnine, etc. During the past few years the fact has been fairly well established that the liver plays an important part in recovery from acute infectious diseases, removing from the blood and conveying to the intestinal canal microorganisms and their products. This function is important in diseases which involve the gastrointestinal canal, such as typhoid fever, in which the pathogenic microorganisms are in close relation with the radicals of the portal system. In such diseases microorganisms are, not uncommonly, separated from the blood by the liver cells and carried by the bile into the intestinal canal, to be eliminated from the body with the feces.

Its functions as an excretory organ are important. Such offices are not confined to the excretion of pigments formed from hemoglobin, but extend to the elimination of bile-salts and cholesterin, certain drugs and poisons, as well as some of the poisonous by-products of digestion.

This very brief and crude statement of the offices of the liver indicates that its functions are varied and complex. We conclude, *a priori*, that upon the efficiency with which its functions are performed will the health of the individual largely depend.

The frequent occurrence of infectious processes in the animal body, and the part played by the liver in the elimination of infectious matter, make complications involving this organ, in the course of such diseases, not infrequent events. Jaundice occurs in the course of malarial fever, pyemia, typhoid fever, typhus fever, scarlatina, in which cases the symptom is due to a sequence of events in the liver analogous to that which occurs in the kidneys in connection with the same diseases.

Case 1.—C. J. L——, aged 24 years, in the fall of 1891 had an attack of typhoid fever which ran an uneventful course until complete defervescence occurred. The duration of the febrile period was twenty-two days. After a period of apyrexia of four or five days' duration, there was a slight chill with a rise of temperature, the mercury reaching 103.7° F. within twenty-four hours. This occurrence gave rise to the fear that a relapse had begun. In the meantime the skin and conjunctivæ exhibited a slight greenish-yellow discoloration, and the patient complained of tenderness on pressure over the liver, which was sensibly increased in size. The jaundice deepened, though it was not intense at any time, and bile was present in the fecal evacuations throughout. The symptoms

gradually subsided, and the temperature became normal at the end of six days, the jaundice disappearing soon thereafter.

Case 2.—Miss C. C. W——, aged 29 years, in February and March, 1893, had an attack of typhoid fever with a pyrexia of twenty-three days. There were no complications or unusual events. On the eighth day, after the temperature had remained normal throughout the twenty-four hours, there was a slight chill followed by a rise in temperature to 101.8° F. Jaundice developed within the next twelve hours, the discoloration being of moderate intensity. There was decided increase in the area of hepatic dulness. The tenderness on pressure over the liver was so great that for a time the formation of a hepatic abscess was feared. The fecal evacuations showed the presence of bile in the intestinal canal, and there was but slight evidence of the presence of bile pigment in the urine. The disturbance gradually subsided, the tenderness disappeared, the liver returned to its normal size, the skin assumed its normal color, and the pulse and temperature were natural at the end of a week.

Case 3.—Mrs. S——. This woman was a patient of Dr. P. H. Jobse, to whom I am indebted for the notes of the case. She was admitted to the Presbyterian Hospital in August, 1897, for an operation for the radical cure of a hernia. Operation performed on August 25, at 7.30 A.M.; patient in good condition. She complained excessively of nausea following the operation and on the next day. Temperature on the 26th rose to 101.2° F.; vomiting continued. On the 27th the vomiting continued, and the patient became jaundiced. The mind became dull, and by the 28th the patient was delirious, with involuntary evacuations from the bladder. The bowels were constipated. The administration of calomel resulted in the evacuation of excessively fetid feces. Fearing infection through the wound, the stitches were removed, but the wound was found to be perfectly healthy and aseptic. On September 4 the temperature was again normal, and the skin had nearly regained its natural color. The bowels had, in the meantime, been unloaded of an immense amount of fetid fecal matter, which showed the presence of bile in the intestinal canal.

Case 4.—Mrs. R. E. A——, aged 22 years, was taken sick December 11, 1897; there was a marked chill, with a rise of temperature to above 105° F. The cause was a miscarriage at the third month. The fetus was in an advanced stage of decomposition. Patient was removed to the Presbyterian Hospital, where the uterus was emptied and irrigated. The temperature rapidly fell to normal,

where it remained for twenty-four hours. At the end of this time another chill occurred, and the temperature rapidly rose to above 106° F. Fearing that there was a further nidus of infection in the uterus, this organ was thoroughly curetted, irrigated, and packed with iodoform gauze, sufficiently loose to provide for perfectly free drainage. Scarcely any reduction in temperature followed this procedure, and fears were entertained as to whether the uterus was not itself involved in an infective process. About this time it was noticed that there was a yellowish-green discoloration of the conjunctivæ and skin, of moderate intensity. There was slight increase in the area of hepatic dulness, with marked tenderness on pressure. The fecal evacuations contained bile. The temperature ranged from 103° to 105° F. for four days, after which it rapidly fell to normal, with coincident amelioration of all other symptoms and the disappearance of the jaundice.

Case 5.—Mr. J. B——, aged 41 years, farmer. This case was seen in consultation with Dr. H. A. Albers, who has very kindly allowed me to use his notes of the case. The patient, in previous good health and of good family history, was taken sick January 23, 1898. The symptoms were indefinite at first. The temperature ranged above 102° F. Jaundice appeared in a few days, and this symptom became a marked feature of the case. The liver was increased in size, as was also the spleen, there being slight tenderness on pressure over the liver. Delirium and subsultus tendinum developed about the eighteenth day of the disease. Bile was present in the stools, at all times, during the course of the disease. Improvement was marked February 19. The liver decreased in size, as did the spleen, the jaundice nearly disappeared, temperature became normal, and the patient was up and about the house. On March 9 there occurred a chill, with a return of fever, the temperature reaching 103° F. and above; the jaundice rapidly returned, accompanied by delirium and increase in the area of hepatic dulness. The case ended fatally March 17. Unfortunately it was not possible to secure an autopsy, and the morbid conditions in the abdominal cavity can never be positively known.

Case 6.—Mrs. J. I——, aged 49 years. This patient was taken sick on April 4, 1898, with an attack of pseudomembranous enteritis, a disease which has occurred with her several times within the past four or five years. On April 6 she had a chill of short duration, which was followed by a rise of temperature, the mercury reaching 102.8° F. within a few hours. At the time of my first visit a distinct yellowish discoloration of the skin was observed, which deep-

ened until the jaundice became marked — indeed, almost intense. There was some pain in the right hypochondriac region, which was increased on pressure, but there was no appreciable increase in the size of the liver. Bile pigment appeared in the urine for a few days, though in comparatively small amounts, and the fecal evacuations did not at any time show entire absence of bile in the intestinal canal. The primary disease, the pseudomembranous colitis, lasted three days, but the jaundice persisted for more than a week after the complete disappearance of the intestinal disturbance; the temperature remaining above 101° F. during all this time.

These cases illustrate fairly well the essential features of the form of disease under consideration, both as to etiology and clinical history.

The jaundice in these cases was mild, except in the one that ended fatally. In that case the jaundice reached a degree commonly attained in the jaundice of obstruction. The mildness of the jaundice in these cases would seem to indicate that only a part, and possibly only a small part, of the bile secreted was absorbed, the result being a more or less marked yellowish discoloration of the skin and conjunctivæ. That only a part of the bile was absorbed into the blood is shown by the fact that bile appeared in the fecal evacuations of all these patients, and there was little bile pigment in the urine. These points are in striking contrast with the clinical characters of jaundice from obstruction of the common duct, either as a consequence of the impaction of a gall-stone, or from ascending catarrh from the duodenum.

In all these cases there was another feature in striking contrast with the jaundice of obstruction, namely, the decided constitutional disturbance that developed. In the mildest forms of infectious jaundice there may be so little constitutional disturbance as to be scarcely observable, and such a case might readily be indistinguishable from catarrhal jaundice of intestinal origin. While this may be the case in exceptional instances, constitutional disturbance is a very marked feature of the disease.

Case 3 represents a rather mild form of the disease so far as constitutional symptoms are concerned; while Case 5 represents the most severe, being characterized by fever, dry tongue, subsultus tendinum, delirium—in fact, the "typhoid state"—and terminated in death.

The cause in a majority of cases is a disturbance in the intestinal canal, shown by diarrhea or extreme fetor of fecal evacuations. In some cases the seat of the infection is not well established. No seat

of infection could be determined in Case 5, and in Case 4 the uterus was primarily infected rather than the intestinal canal.

The pathogenesis of this form of disease has been closely studied in recent years. What has been determined seems to warrant the conclusion that the infectious material in its passage through the liver, and especially in its passage through the bile-ducts, is the offending substance. By its presence in the bile-ducts, or in the capillaries about the bile-ducts, an angiocholitis or a periangiocholitis is initiated. As a consequence of such inflammation the caliber of the bile-ducts is lessened, and the bile itself is rendered unusually viscid, with an obstruction to the outflow of the bile. As a result of this combination of circumstances we have absorption of some bile and consequent jaundice, while at the same time bile appears in the fecal evacuations.

This is a pathologic process which is, in many respects, similar to what takes place in the kidneys in certain infectious diseases, in which the morbific material is specially injurious to these organs; as diphtheria, scarlatina, and measles.

Some writers have thought that jaundice as it occurs in connection with such diseases as have already been mentioned should be distinguished from that which arises in such an independent manner as to be regarded as almost specific, as "Weil's disease," "epidemic," "febrile," "infectious," or "malignant" jaundice, and acute yellow atrophy of the liver. When due regard is paid to all we know of the etiology and pathology of these various diseases, there appears no sufficient ground upon which to base such a distinction.

The gradation between the mildest and the most malignant of these cases is such as to merely indicate that there is a corresponding gradation between the virulence and amount of the morbific agent operative in each case. There are no clinical or pathologic facts warranting the conclusion that there is any essential difference between them.

TWO CASES OF PROTRACTED ERYSIPELAS.

BY AUGUSTUS A. ESHNER, M.D., PHILADELPHIA,
Professor of Clinical Medicine in the Philadelphia Polyclinic; Physician to the Philadelphia Hospital, etc.

Erysipelas is an infectious dermatitis dependent upon the activity of the streptococcus of Fehleisen, which, it is now believed, is identical with the streptococcus pyogenes. The period of incubation is placed at from three to seven days. The disease is self-limited, terminating usually, when uncomplicated, within a week or ten days. One attack, however, seems to predispose to subsequent infection rather than to confer immunity, and relapses and recurrence are not uncommon. So-called erratic or migratory erysipelas may persist for weeks or months, the disease appearing successively in various parts of the body. Of a chronic form of erysipelas I have no knowledge, and I desire to report two cases that seem of some interest in this connection, particularly the first. In this the duration of the disease was three months; in the second case it was ten months.

There was referred to me on January 19, 1899, from the department for diseases of the nose and throat, under the charge of Dr. Joseph S. Gibb, at the Philadelphia Polyclinic, a schoolgirl, 14 years and 10 months old, with a request for a report as to the condition of the urine. The patient presented a striking redness and puffiness of the face, involving the nose and the adjacent cheeks, partially closing the eyes, and exhibiting signs of slight desquamation. The affected tissues were somewhat brawny, but not separated from the rest by any sharp line of demarcation. The girl had been under treatment for several weeks for nasal trouble and was improving. On inquiry it was learned that the face had begun to swell some three months previously, when it was also painful and exceedingly red. This condition was attended with fever, and persisted for two weeks, when it grew slightly better, but the swelling and redness had never quite disappeared. The mother thought it rhus poisoning, but treatment that had been successful in combating this affection in her other children failed here, and seemed even to aggravate the trouble.

There had been no swelling of the hands or the lower extremities, and no nausea or vomiting or derangement of micturition, or alteration in the appearance of the urine, and no other symptoms of nephritis; and the patient was not compelled to, and did not, go to bed. There was no history of exposure to a like disease, and no

testimony pointing to family or personal predisposition. The patient had had an attack of whooping-cough at the age of two years, and one of measles at ten. For two years she had suffered from a loose cough, with mucopurulent expectoration. Occasionally attacks of biliousness occurred, with nausea and vomiting. Menstruation had not yet set in. The heart exhibited no evidence of disease.

Viewing the case as one of erysipelas I prescribed pilocarpine hydrochlorate, one-twelfth grain, thrice daily. On the patient's return, after a week, the appearance of the face was distinctly improved. The swelling and also the redness were appreciably less, particularly on the right side, and our own impression was fully confirmed by that of the parent. There had been free sweating and increased salivation, with some depression, from the physiologic effect of the pilocarpine, and, most interesting of all, perhaps, menstruation had begun on the 24th of the month and was in progress, with a scanty flow of blood, but unattended with pain or discomfort. The temperature was 99.6°, the pulse 114. The appetite was good; the bowels regular; sleep was disturbed by cough. Excoriations were evident about the entrance to the nares. The urine was found at the first examination to be of acid reaction, to have a specific gravity of 1020, to be free from sugar, but to contain about one-eighth per cent of albumen, together with numerous epithelial cells and red and colorless blood-corpuscles. A second specimen, examined a week later, was found to be free from albumen, and, as the first was obtained during the menstrual period, the albumen present, together with the blood cells, was reasonably attributable to admixture with the urine of the blood discharged from the vagina, and not to any possible renal complication of the erysipelas.

Dr. Gibb has been kind enough to give me the following report of the nasal conditions: "Both middle turbinates are slightly hypertrophied. The septum is bilaterally thickened high up, close to the middle turbinate bodies. There is a slight mucopurulent discharge coming from above the middle turbinate on the left, but not increased by the dependent position of the head, so that at the present it is uncertain whether or not the accessory sinuses are involved. There is slight hypertrophy of the pharyngeal tonsil, and both faucial tonsils are hypertrophied."

This case presents several points of more than ordinary interest —some diagnostic, some clinical, some therapeutic. The moment I saw the patient erysipelas suggested itself, so striking was the appearance; but I had never before seen a similar case, nor had I knowledge of the occurrence of chronic erysipelas, apart from wan-

dering erysipelas, which in the course of its migrations may persist for weeks or months. The patient lived in the suburbs of the city and might have been exposed to poison-ivy—in fact, other children in the family had suffered from rhus poisoning—but there was no history of infection, and it was midwinter, when such infection would seem to be unlikely. Further, the treatment that had been successful in allaying the toxic dermatitis in the others seemed rather to aggravate the condition in our patient. From this course of reasoning I felt justified in excluding ivy poisoning.

Nephritis I considered improbable, from the want of wide-spread swelling, from the presence of redness and burning, from the absence of urinary derangement, and from the presumable mildness relatively of the constitutional symptoms, as the patient was not compelled to go to bed. The albuminuria, while it seemed to be greater than the number of blood cells present (in consequence of menstruation) would account for, could easily have been a complication or a sequel of the erysipelas, and the absence of casts tends to support this view; and subsequent examination demonstrated that the urinary conditon was accidental.

Partly from the clinical appearances and partly by exclusion I feel safe in considering the case one of chronic erysipelas, and in this connection the excoriations about the nares are not without significance. It is probable that similar slight lesions are often the portal of entry for the streptococcus of erysipelas.

Finally, I do not consider the results of treatment without some bearing upon the diagnosis. It has been my experience that in sthenic cases of erysipelas, in which the depressing effects of the drug are not to be feared, pilocarpine acts with almost specific utility. Injected beneath the skin once or twice daily in doses of one-sixth grain, or given by the mouth in doses of from one-twelfth to one-sixth grain thrice daily, it seems capable of bringing the disease to a favorable termination within from twenty-four to seventy-two hours. Perhaps it does this through the increased supply of blood sent to the periphery and the augmented activity of the sudoriparous apparatus, in consequence of which death or elimination of the streptococci is hastened, and the natural self-limitation of the disease is reenforced and intensified.

Whether or not the advent of menstruation was merely a coincidence in this case it would be difficult to decide; but I am willing to give the drug at least a part of the credit, as its physiologic action would permit us to conceive that the increased amount of blood sent to the uterus and ovaries might be a sufficient stimulus to set into

activity a process awaiting perhaps only some slight impulse to turn the scale in its favor; possibly the action is a more direct and more potent one on the glandular apparatus of the generative organs; and I should tentatively commend the administration of pilocarpine in appropriate doses in cases of functional amenorrhea, in conjunction with iron or such other adjuvant as may seem necessary. Pilocarpus is said to stimulate the gravid uterus into activity, and it has been employed to induce premature labor, especially in cases of puerperal eclampsia. It has also been administered successfully with the object of increasing the secretion of milk.

The second case that I beg to report, while manifesting a tendency to chronicity, differs in some respects from that already detailed. I was called on February 17, 1891, to see a boy, 12 years old, who presented three fluctuating tumors at different parts of the head, and gave a history of puffiness of the face, with brawny induration and redness, for six or seven months. Quinine and iron were administered, and the abscesses evacuated by incision. A swelling at the right angle of the lower jaw developed into an abscess, and this also required incision and evacuation. Suppuration, however, continued, and required and received constant attention. On March 11 characteristic erysipelatous redness and swelling of the face appeared, and pilocarpine hydrochlorate, one-sixth grain, was injected beneath the skin, and fluid extract of pilocarpus administered in doses of twenty drops every three hours. Within forty-eight hours quite a remarkable change for the better had taken place in the appearance of the face. The pilocarpine was repeated on three successive days, and the patient progressed to eventual recovery, although not dismissed until June. According to the history the erysipelas persisted in this case for a period of ten months, during four of which the patient was under my immediate observation.

AN EXCEPTIONAL CASE OF HEMATURIA.

BY JACOB FRANK, M.D.,

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In October of the year 1894 a married woman, 42 years of age, mother of three children, and until that time in good health, was admitted to the St. Elizabeth Hospital, with the statement that for six months she had observed blood in her urine. At times previous to her admission to the hospital, owing to profuse bleeding, she was obliged to have her bladder washed out, but was afforded little relief. She complained of frequent urination with but little pain. Owing to the loss of blood she was anemic.

Upon examination the uterus and appendages, as well as the kidneys, gave negative results. The urine contained blood and was of a light red color; at times it appeared as if more blood than urine was passed. In reference to the source and cause of the bleeding the kidneys were first of all excluded, as well as a catarrhal condition of the bladder; the absence of pain excluded stone in the kidney. At first the treatment consisted of absolute rest in bed, with internal medicines, and daily washings of the bladder with various solutions. The condition of the patient did not improve, and after several weeks' treatment the anemic condition became pronounced. A diagnosis of ulceration of the bladder, with erosions of the vessels, giving rise to the hemorrhage, was made.

In order to verify the diagnosis a cystoscopic examination was made with the straight-window endoscope devised by Professor Grünfeld, of Vienna. A surprising condition of the bladder wall was found; the mucous membrane was covered with numberless uric acid crystals whose sharp points and corners had penetrated deeply into the bladder wall. The free surface of the mucous membrane between the embedded crystals was red and congested, but not to such a degree as one would expect in consequence of the long-standing irritation. This condition explained clearly the long-existing symptoms. It was likewise obvious that the daily washings of the bladder did not remove the crystals, which were firmly fixed, and also that the ordinary methods of treatment need be continued no longer. It was decided to adopt a very different course, and Bigelow's evacuator was employed to dislodge the crystals.

Under an anesthetic the evacuator was introduced and the washing commenced. With each suction of the bulb crystals appeared, and this was continued until the wash-water was free from them.

Why the crystals should have adhered so closely to the mucous membrane as not to be dislodged by the previous washings I cannot say. From the moment the crystals were removed the bleeding ceased, and the patient gained rapidly, soon leaving the hospital. After two years I was advised that she had recovered completely, but since that time I have lost sight of the case.

This case of hematuria with its unusual findings and method of controlling existing symptoms is published, as there is no similar case recorded in literature where like conditions were found on cystoscopic examination, relieved by the methods employed in this case.

17 LINCOLN AVENUE.

CHRONIC POSTNASAL CATARRH.

BY G. F. HAWLEY, M.D., CHICAGO,

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The title "chronic postnasal catarrh," or chronic nasopharyngitis, is applied to a low grade of chronic inflammation located in the postnasal space. The condition is found at all periods of life, from the nursing infant to the nonagenarian. It is so prevalent in America that it has been entitled by Mackenzie and others "American catarrh." Whether this prevalence is due to climatic influences, or to predisposing factors in those living on this side of the Atlantic, is a mooted question. That postnasal catarrh may be associated with a neurotic diathesis due to degeneracy, and also to intrauterovaginal states, can hardly be questioned. The functions of life are more or less easily disturbed in such cases, resulting in a predisposition to all types of disease, especially those affecting the glandular system. It is particularly noticeable in the torpid and erethistic types of the tuberculous diathesis, characterized by very light or very dark hair, light or dark eyes, a dark, pallid, or light complexion, much perspiration, small blood-vessels, slow, feeble, or rapid pulse, and want or excess of energy in mental and physical functions.

Nowhere is there a richer supply of glands than in the postnasal space, hence this is naturally affected early by the condition mentioned. In nearly 90 per cent of all chronic catarrh this space is affected. It has been claimed that a perfectly healthy postnasal space can hardly be found in this country.

The far-reaching and baneful effects of this disease cannot be questioned, since many secondary disorders affecting the upper air-passages and bronchi are due to postnasal catarrh. It is the *bête noire* of the singer and public speaker. It is a frequent cause of suppurative and catarrhal inflammation of the middle ear, both in the young and old, and frequently causes deafness in after life. This constant state of inflammation disturbs the circulation, and by causing congestion and hypertrophy of the turbinates prevents free drainage and obstructs to a greater or less degree the passage of air through the nose.

The causes of this disorder are divisible into predisposing and exciting. Judging from the extensive and early manifestations of this disease the predisposing causes are inherited or congenital from maternal leucorrhea, etc. The exciting causes are sudden changes

of temperature, and diseases affecting the upper air-passages, such as measles, scarlet fever, diphtheria, etc. The symptoms are so well known that it is hardly worth while to repeat them here.

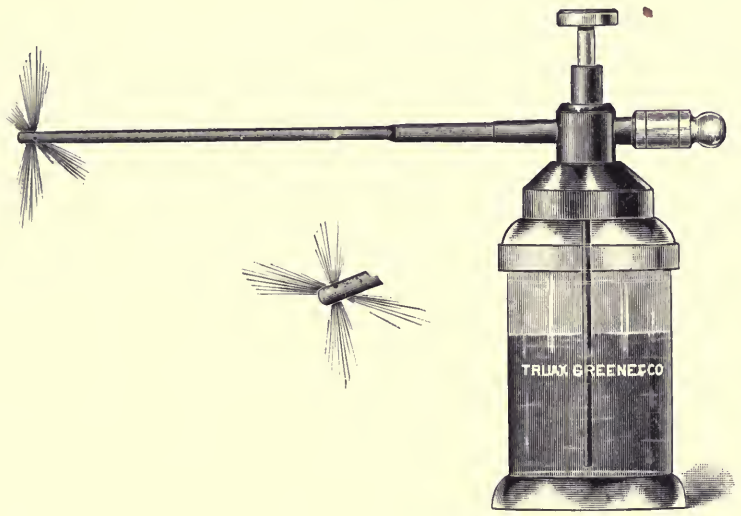
The clinical aspect of the disease varies according to the age of the patient and the duration of the trouble. In the early stage, particularly in the young, the postnasal space is frequently found more or less filled with masses of tissue, giving to the touch a sensation similar to that of angleworms (adenoid growths of Meyer). This mass is easily broken down and exceedingly vascular. Later on, instead of masses of tissue, isolated growths or nodules occur, more or less evenly distributed over the vault, distinct and independent of each other. These also in the early stage of the disease are exceedingly friable. Later these growths become fibrous in character and are difficult to remove. This form of the disease is usually associated with granular pharyngitis. Often, as in cases of old chronic suppurative inflammation of the middle ear, the mucous membrane appears swollen and soggy. Again, the mucous membrane, though generally healthy in appearance, presents in the median line folds of hypertrophied tissues. These are parallel to each other and run upwards from behind the soft palate to the vault. In all of these conditions the mucous membrane is highly congested, causing that sense of fulness so distressing to the sufferers from this disorder.

I have also found at the median line and near the vault single cystic growths or swellings about the size of a split bean, smooth to the touch, and with the sides gradually running into the adjacent mucous membrane. These are easily destroyed by the finger, exposing a pocket-like depression with smooth, hard walls. Occasionally the mucous membrane is covered by highly vascular granulations, which, though hardly visible on examination, give to the finger a sensation as if passing over velvet or plush. All these abnormal conditions not only prevent a cure, but cause the many distressing symptoms associated with this form of the disease. The importance, therefore, of a thorough examination and treatment of the postnasal space in all catarrhal affections of the upper air-passages cannot be too strongly urged upon the profession. In no other way can the practitioner expect to accomplish permanent good, as in this locality the causes which keep up the inflammation are found.

The prognosis is good if seen in time and treated properly. If not, the condition gradually grows worse, affecting the neighboring parts and producing ear complications, and finally inflammation of the pharynx, larynx, and bronchial tubes. Disturbance of circula-

tion caused by these conditions frequently leads to a gradual occlusion of the nose by thickened mucous membrane. Thus its natural function is almost entirely destroyed, causing mouth-breathing with all its ill effects. The treatment should be constitutional, surgical, and local.

Constitutional treatment depends upon the condition of the individual. It should build up and support the general health. Few cases of postnasal catarrh can be cured or even relieved without surgical interference, which includes the removal of all outgrowths and diseased tissues. Local applications, in whatever way applied, should be cleansing and stimulating to the parts affected. Up to



the present attempts to cleanse and medicate the postnasal space have proven unsatisfactory. The anatomical relations of the parts are such that to thoroughly cleanse and medicate the diseased tissues by any instrument in use is practically impossible. It is due to this fact, more than to the obstinacy of the disease, that a larger percentage of cases are not cured. The spray is the best means to accomplish this end. As generally used by the profession it is open to serious objections. While the atomizers furnished by the instrument-makers may thoroughly cleanse the anterior chamber of the nose and the pharyngeal walls, they can force but little medicament into the postnasal space in the form of spray. The spray soon becomes a stream which flows along the inferior meatus until it either falls into the pharynx, or by the aid of the soft palate passes into

the adjacent nostril. On account of the extreme sensitiveness of the mucous membrane lining the nasal passages the practitioner is, moreover, restricted in the selection of medicaments and in their strength. Silver nitrate, for example, one of the best remedies in treating postnasal catarrh, can be used, if at all, only in weak solutions, on account of the strong reaction produced in the nose. The nose, whether healthy or diseased, must receive the full effects of all medicaments alone intended for the postnasal space. If the attempt be made to spray back of the soft palate, the time allowed for the treatment is so short from gagging of the patient that but little effect can be produced upon diseased tissues. The same objection exists to the use of powders. The brush is not only disagreeable to most patients, but gives unsatisfactory results as well.

One object of this paper is to describe an improved instrument which overcomes many of these difficulties. It is so constructed that it can be inserted through any nostril, no matter how small, until it reaches the postnasal space, where a medicament by means of a spray can be applied directly and forcibly against the entire diseased surface. The strength of the medicament is graduated by the amount of spray used, which again is gauged by means of a small set-screw at the head of the bottle containing the medicament.

POSTERIOR COLPOTOMY: A CONSERVATIVE SURGICAL PROCEDURE.

BY A. J. PULS, M.D., MILWAUKEE, WIS.

When in operating for chronic diseases of the female generative organs within the pelvic cavity the question arises how to operate, not alone exact diagnosis but close discrimination is necessary to select the proper methods for each individual case. Past experience has taught that the results of the abdominal method and those of the vaginal procedure do not satisfy our expectations. In a long operation we find it advantageous for the patient to change our methods. A sharp line need not be established to define the field limited to celiotomy or to colpotomy. The suprapubic is the customary route of entrance to the abdominal and pelvic cavities. When we consider that the vaginal route affords an easier access to the pelvic floor, and see the repeated demonstrations of good results from vaginal section for pelvic diseases, it seems that a combination of both methods may be found at times expedient.

Those following the vaginal method unfortunately extend the indications for operation to the entire field of intraperitoneal pelvic surgery, and consider themselves prepared to meet all kinds of pelvic affections requiring operative interference. On this account the vaginal operation is falling into discredit, because in order to accomplish its purpose very often the uterus is sacrificed or mutilated and the intestines perforated or otherwise injured. Frequently the operation is abandoned on account of firm adhesions, or excessive hemorrhage compelling the operator to make a suprapubic incision.

No differences of opinion exist in regard to the treatment of simple pelvic abscesses or serous exudates within Douglas' pouch. Evacuation of the fluid collection, followed by drainage, invariably effects a cure.

However, the views of the modern gynecologists are diametrically opposed respecting the operative treatment of chronic pelvic affections complicated with parametric adhesions. In abdominal operations the first procedure is removal of the diseased uterine appendages; then enucleation of the masses of inflammatory tissues, and drainage, if needed. Whenever extirpation of the sac is found impracticable, it is brought to the edge of the lower angle of the wound and sutured to the abdominal wall. By the vaginal route the operator explores the inflamed tissues, breaks up the pus foci and exudative material, and then drains. Unless he follows the directions of the French school, which advocates "uterine castra-

tion," he removes the appendages together with the uterus. Statistics do not prove the superiority of either suprapubic or vaginal celiotomy (Veit). The ultimate results each operator must find for himself in the health secured by the patient, and in its permanency.

Minor surgical operations done at the proper time and under correct methods are of greater value than the results obtained by heroic surgical procedures. Our object in operating for pelvic disease should not be an attempt to accomplish a surgical feat, but preference should be given the simplest method, mindful of the fact that a second interference may be required. First of all we strive to save life and expose our patient to no great risks.

Several months ago two cases of pelvic abscess came under my observation and treatment. In both pus had ruptured into the bowel and was discharging freely through the rectum. In the first case, subsequent to puerperal sepsis, pus was noticed in the stools almost daily for six months; in the other the pus had perforated the bowel on the day previous to my seeing the patient. Posterior colpotomy and thorough drainage of the pus sacs gave immediate and gratifying results.

Wherever pus can be located in the periuterine tissues, its removal by a vaginal incision is indicated in order to prevent destruction of the neighboring tissues. Inflammatory pelvic disease, unless arrested, is known to lead to a chronic stage, producing hard and firm indurated masses, shortening and thickening the uterine ligaments, forming within the parametric tissues serous and finally pus exudation.

A very large percentage of acute inflammatory pelvic processes are no doubt amenable to expectant treatment. Resorption of the exudative masses surrounding the uterus proceeds slowly to a final resolution of the exudate. A knowledge of the cause of infection and history of the case is necessary to establish the right course of treatment at the outset for the arrest of the disease.

Invalidism and long confinement due to chronic affections of the pelvic organs can be traced to the enclosure of pus which has withstood resorption for months and even years. Removal of the encysted pus is often followed by immediate health, without need of extirpation of the generative organs.

The pus focus must be attacked at the anatomical point most accessible. The exudate being walled off from the abdominal cavity and therefore extraperitoneal, an incision can be made: first, through the posterior vaginal vault; secondly, through the anterior vaginal vault; thirdly, above Poupart's ligament. In a case where pus was forcing its way upwards from the pelvis into the iliac fossa,

being detected under the abdominal wall above Poupart's ligament, there was apparent recovery after incising and draining the abscess which led into the pelvic cavity. But six weeks later the same process developed on the other side of the abdomen. A similar procedure was finally effectual, and the patient made a good recovery.

Pyosalpinx and hydrosalpinx closely adherent to the vagina can be permanently cured by an incision and drainage into the distended sac without removal of the tube. To prove the value of posterior colpotomy in double pyosalpinx without removal of the sac, the following case is cited:

On bimanual examination I found a uterus wedged in by two distinct tumors. On the right the tumor felt as large as a child's head, and was low down in the pelvic cavity; the other tumor was smaller, higher, and not so closely connected with the vagina. It was necessary to make a separate incision into each pus sac through the posterior vault. Drainage was made with iodoform gauze. Although this was done a year ago the patient has remained well ever since. At the time of operation abdominal section was out of the question, since the very thick and firm adhesions of the sac to the pelvic floor would have prevented an enucleation.

Of late, anterior as well as posterior colpotomy is practiced for the removal of small pelvic tumors. Separation of uterine adhesions and fixation of the uterus to the vagina by anterior colpotomy are preferable methods in some cases, especially whenever vaginal or perineal operations are indicated on the same patient. The selection of the vaginal route to avoid a large abdominal scar or to prevent subsequent ventral hernia is unnecessary, since both objections may be obviated by correct suturing of the abdominal wound.

Pelvic hematocele or retrouterine hematocele can be safely incised through the posterior vaginal vault and relieved by emptying the hemorrhagic contents.

Tubal pregnancy, ruptured into the broad ligament, may in course of time present itself as an ordinary retrouterine hematocele; the products of gestation becoming absorbed by the peritoneum, the coagula and liquid blood completely filling Douglas' space, and gradually crowding the uterus towards the symphysis pubis. For ruptured tubal pregnancy, posterior colpotomy has been repeatedly done with marked success. A number of my own cases have convinced me that the vaginal route is attended with less shock than I have noticed after a laparotomy. However, in extra-uterine gestation before the period of rupture, or during rupture into the free peritoneal cavity, the hemorrhage is checked more easily and safely through inspection gained by a suprapubic incision.

THE PROPER OPERATION FOR CANCER OF THE RECTUM.

BY JOSEPH M. MATHEWS, M.D., LL.D., LOUISVILLE, KY.

Two or three years ago I reported to the American Medical Association my results with the Kraske operation, having at that time performed it five times. In that paper I stated the individual belief that the time would come when the surgeons of this country would not operate by the Kraske method. In the discussion Dr. Senn of Chicago, Dr. Tiffany of Baltimore, and others, objected to most of the paper. It is well known that Dr. Senn, this year before the American Medical Association at Denver, took the position that I did two or three years ago; he stated that he never intended to do the Kraske operation again. I do not reject the operation for its danger, or because it is a major operation, but for the graver reason that whenever it is determined to remove the whole rectum, the time for any operation has passed.

If the rectum proper is affected in its entirety by a malignant growth, there must be infiltration of glands and of organs around the rectum that cannot be removed in the operation. If this premise is true, then the operation would be useless. Dr. Senn stated in his paper at Denver that the rectum can be removed in its entirety without sacrificing or damaging the sacrum, a statement with which I fully agree. The extensive dissection demanded by the Kraske method is not required in extirpation of the rectum. A circular incision around the anus, and if necessary the removal of the coccyx, gives all the room necessary. I have reported cases of excision of the rectum by the circular method which were quite as successful as those by the Kraske operation; it is not so difficult, so bloody, nor so dangerous.

Latterly a number of physicians have advocated thorough curettement of the rectum for malignant growths, if we believe them with as much success, so far as statistics go, as by extirpation. I confess I did not believe this. In the last three or four months several cases have been referred to me, where I thought the location of the malignant growth in the fixed part of the rectum permitted a radical extirpation by the curette.

Recently a lady was sent to me from a distant city with a malignant growth in the rectum as large as my fist. It was very friable, and I believed at the time if I attempted to remove it by the Kraske method, or a circular incision, that I would have great difficulty because of the soft nature of the cancer, so I concluded to

curette. Dr. Ap Morgan Vance was present at the operation. I curetted the entire growth from the wall of the bowel until we could see and feel perfectly healthy tissue. It was remarkable how smooth the surface was where the growth had been curetted away. No nodule and no portion of the cancer remained. The patient is doing well, because there was no serious operation.

On two previous occasions I have done the same thing, though perhaps not so perfectly. As to the ultimate result in any of the cases where I have practiced curetting I cannot say. What of the results of extirpation of the rectum, by other methods? We must wait a sufficient time to justify us in passing a favorable verdict. No man has the right to go before a medical society and report a successful operation for cancer of the rectum in two or three months, scarcely in two or three years; if they but wait a little longer there will be a reappearance of the growth. Major surgical operations should not be favored, unless we believe they will cure, or radically benefit, our patients. After practicing curetting I am inclined to agree with those who advocate it. Perhaps it will supersede, to a great extent, the formidable operation of extirpation of the entire rectum, and the statistics may be quite as favorable as those reached in the operation for removal of the whole rectum.

AN EXPERIMENTAL STUDY OF THE TRANSFORMATION OF EPITHELIUM TO CONNECTIVE TISSUE.

BY LEO LOEB, M.D., CHICAGO.

In this paper I wish to report some observations on the metamorphosis of tissue, obtained by placing it under certain experimental conditions. In one series of experiments the skin was transplanted on superficial wounds; in another series it was transplanted in the deeper layers of the ear of the guinea-pig. The transplanted skin was examined in many stages of the healing process. A few days after transplanting a thickening of all parts of the epithelium takes place. If sections are made, they all show some parts of the epithelium changed to connective tissue. The rapidity of this transformation is not equal in all parts, but is best observed at places where the papillæ are formed. At such places the protoplasm of the deepest epithelial cells is more or less changed to connective tissue protoplasm, as is shown by the different tint with the hematoxylin and eosin stain. Here also one sees how the nuclei of the deeper epithelial cells are gradually transformed into the nuclei of connective tissue.

That this transformation actually takes place is borne out by the following facts: The nuclei of the lowest epithelial cells may under different conditions have different morphological forms. Numerous observations have shown that the nuclei of the underlying connective tissue very often have forms corresponding to those of the nuclei of the epithelial cells. At certain places where this transformation is going on one notices the fading away of the epithelial cells, so that in some cases only their dim outlines are visible. Again, not infrequently the nuclei of the deepest epithelial cells have lost their usual vesicular structure and have a structure more like that of the nuclei of connective tissue, being more or less rod-like in character.

In a former publication[1] I mentioned how regenerating epithelial cells are closely connected with the underlying tissue by protoplasmic bridges, so that it is possible to trace the fibers of the epithelial cells into the underlying tissue.

The transformation of epithelium into connective tissue is especially striking in the hair follicle. Here we notice how the epithelial cells of the follicle gradually change to connective tissue, and how the epithelial nuclei change to nuclei of connective tissue. I have also shown that under certain conditions the regenerated epi-

[1] *Arch. f. Entwickelungs mechanik*, vol. vi, part 3.

thelium presents the appearance of that epithelial layer which I have called the "upper protoplasmic layer." This layer is characterized by its homogeneous, transparent protoplasm, with rod-like nuclei and no visible cell limits. In some of the transitional stages of this upper protoplasmic layer the protoplasm takes the same color with eosin as connective tissue, and the lamellar arrangement is also often present. These facts, together with the deep-staining nuclei, cause it to have an appearance very similar to that of connective tissue, yet the structure is undoubtedly of epithelial origin. I wish to state this relation to connective tissue merely as a suggestion; the upper protoplasmic layer may, in fact, be closely related to keratin.

This change of epithelium into connective tissue is marked in the following experiments on the skin of the guinea-pig: An incision was made on one side of the ear; the skin was turned upward and a wound was made in the cartilage of the ear, and the raised flap of skin was turned down into this wound below the cartilage. The wound was covered with collodion. Sections made after five days showed that the skin had regenerated to a large extent. In this regenerated skin I could observe very clearly how the deepest epithelial cells assumed the character of connective tissue. The cells in this newly formed connective tissue had about the same character as the epithelial cells; the direction of the nuclei of the connective tissue was the same as that of the nuclei of the epithelium from which they were derived. The blue tint of the epithelial protoplasm gradually changed to the more scarlet color of connective tissue protoplasm when stained with eosin-hematoxylin.

I shall now briefly describe some specimens obtained from the transplanting of white skin on wounds previously covered with white skin. One specimen was examined eight and a half, another eleven, days after the operation. Before going on with this, however, I may recall some facts already given in my paper on "Regeneration of Epithelium," of the epithelial tissue breaking through cartilage. (Compare Figs. 38 and 39, *Arch. f. Entwickelungs mechanik*, vi, part 3.) Here the epithelial cells take a spindle form, being much elongated, so that they could be easily taken for connective tissue. In the meantime I have been able to observe another experimental case of epithelium breaking through cartilage. To return to the above specimen, cut eleven days after transplanting; in this case some of the connective tissue was removed along with the transplanted epithelium. The transplanted skin had united at its edges with the original skin; of course, the peripheral margin of the transplanted epithelium existed as wound surface not covered by connective

tissue. From the place where the transplanted and the original epithelium unite one sees the epithelial cells breaking out into the deeper tissues near the cartilage. At this point especially the epithelium is much thickened, and the branching out of the epithelial cells occurs here in greatest quantity, along the whole wound between the transplanted and the original tissue, meeting the epithelium again on the other side of the wound. Near the epithelium the cells still have their epithelial structure, but as they gradually branch off they assume more and more the spindle form of connective tissue. One often sees, especially where papillæ have been formed, that between the epithelial cells, which are situated near the margin of the epithelium, the protoplasm takes a lighter tint like that of connective tissue. Often the whole intranuclear protoplasm undergoes this change, where the new formation of papillæ takes place.

While in many places we are able to see by transitional stages this transformation of epithelial cells into the spindle cells of connective tissue, there appears at some places a sharp line of demarcation between the epithelial cells and the connective tissue. This, however, does not militate against my view of transformation; but this sharp line is due, in my opinion, to the fact that the transformation has proceeded along the whole line simultaneously, in which case we should expect to see just such a sharp division line of demarcation between the epithelium and connective tissue. In fact, it no more speaks against this transformation than the sharp line of demarcation which exists between the keratin and the deeper layers of the skin proves that the keratin is not derived from the deeper layers. Although we are able to distinguish very distinctly by shape of cell and staining between the keratin and the Malpighian layer, yet no one doubts the one is derived from the other. The same is true of the sharp division line sometimes observed in the transplanted skin.

In this process of transformation it often looks as if the epithelium had melted away; in some places one sees the vanishing of the epithelium, while between such parts sharp projections of the epithelium are still left. The forming papillæ generally do not have the regular outline seen in the skin, but have the most irregular and grotesque forms. Very often they form an overhanging protuberance, the basal portion of which is separated from the epithelium by a straight line. This curious formation can be explained only on the supposition that the papillæ are formed by the gradual breaking down of the epithelium. Along the margin of the papillæ

are observed the dim outlines of the original epithelial cells, nuclei which have partly acquired the character of connective tissue nuclei, and a few epithelial nuclei remain lying in the direction of the nuclei of the epithelial cells.

Among the outwandering and transforming epithelial cells there often appear groups of cells which retain more of their original epithelial character than the neighboring cells, the protoplasm between such cells not having changed to such a marked extent as that of the other cells. In my former paper on the regeneration of epithelium, there was one chapter dealing with the origin of giant cells. I showed that these giant cells originate from masses separated from the epithelium, especially at the margin of the wound, where the epithelial layers meet. This fact can now be easily explained by the observations just described. At the margin of the wounds, where the two epithelial layers meet, the epithelium forms a stream wandering downward into the connective tissue, and it is here that the giant cells would be principally formed, they being separated from the epithelial surface by the metamorphosis of the epithelial tissue which surrounds them into connective tissue.

I have other proof that the epithelial cells of the skin can form giant cells. In one experiment I implanted skin and agar in the kidney. After nine days this was examined. Besides the usual transformation of the epithelial cells into connective tissue cells, I observed that some of the epithelial cells fixed themselves upon the agar, and there formed giant cells. The nuclei of these giant cells retained their vesicular structure, and the agar in the immediate neighborhood of the formed giant cells stained red with eosin. The sections made show distinctly that the epithelial cells fixed upon the agar have the power to dissolve the agar. This is in complete accordance with my former observations, according to which the epithelial cells have the power to penetrate through blood, cartilage, and fibrous tissue, which substances they are able to dissolve. I then pointed out that the regenerating epithelial cells must have a peptonizing ferment, and this view is strengthened by the fact that they dissolve agar also, weak acid not being able to dissolve agar. But this fact I intend to describe more fully at some other time.[1]

In the second experiment the white skin transplanted on wounds previously occupied by white skin was examined after eight days.

[1] I have described in the *Johns Hopkins Hospital Bulletin* (January, 1898) the peptonizing action of the epithelial cells of the skin. At the same time in a preliminary paper I demonstrated the same proteolytic action in other epithelial cells—the epithelial cells of the cornea. Lately Geret and Hahn showed chemically that the liver cells contained such a ferment (*Ber. d. Deutsch. Chem. Gesellsch.*, Bd. xxxi).

This differed from the one just described, in that the graft was cut more superficially, less of the connective tissue having been taken with it. The results, however, are the same as those just described, except that instead of the spindle formation from epithelial cells taking place at the margin of the wound only, it also occurred at many points along the surface. But in such cases the spindle cells did not penetrate as deeply into the connective tissue, but remained more superficial.

I wish to especially emphasize the fact that the transplanted epithelium carried no connective tissue with it, where the cell migration took place. In places where the spindle cells go down the transplanted epithelium is much thickened, and the cells near the epithelium still stain bluish with hematoxylin and eosin, and show all the transitional stages between epithelial and connective tissue cells. Sections made five days after transplantation show still more plainly the transitional stages.

I also made some experiments on the formation of connective tissues over a blood-clot. In such cases there may be found just below the regenerating epithelium a layer of connective tissue over the blood similar to what I have named the "upper protoplasmic layer." While the original connective tissue seems to branch out somewhat from the side and bottom of the wound, yet this is separated from the above mentioned layer of connective tissue. The free margin of this layer of connective tissue found around the regenerating epithelium is sometimes in advance of the epithelium. It must also be stated that this layer of connective tissue is far more advanced than the connective tissue derived from the outgrowing of the original connective tissue. While this observation by itself does not prove that epithelial tissue forms connective tissue, yet it is in perfect accord with all the other observations and strengthens my opinion.

In a former paper I described how in certain cases the epithelium penetrated into the blood, but in such cases I have not been able to detect any connective tissue. In my paper on the regeneration of epithelium I showed that when the epithelium wanders into a scab the epithelial cells are preceded by fibers which are undoubtedly of epithelial origin. Beneath the regenerating epithelium one finds a layer of fibrous tissue so closely attached to it that it can only have been derived from the epithelium. This layer has the character of connective tissue lamella and branches out beneath into connective tissue.

Several experiments were made in which the skin, together with

agar or blood-serum, was transplanted into various organs. I shall not give these experiments in detail, but the results confirmed the views obtained from experiments reported in this paper. The best way to verify my results is to repeat the experiment described here.

It may be well to discuss some objections that could be raised to my interpretation of the facts presented. The first objection is that the phenomena observed are mere artifacts; that the epithelium is dragged into the connective tissue by the microtome knife. This objection can hardly staud, as I made thin and thick sections, both in celloidin and paraffin, and in all cases the same results were obtained. While in thin paraffin sections there is a possibility of the hair moving in its cavity, yet the epithelial cells are never forced into the connective tissue. Another point against this objection is as follows: While the mitoses and the typical chromatophores lie in the deepest layer of the epithelium, and are found there in each section, I have never been able to observe any in the connective tissue.

The second objection is that the facts observed might be interpreted as showing that the connective tissue changed to epithelium. This, however, cannot be true, for whenever a wound is made the new epithelium appears only at the margin and in direct connection with the old epithelium; besides that, many microscopical pictures exclude this possibility.

A third objection which might be raised is that the phenomena described are due to a mere mingling of the connective tissue with the epithelium by an upward growth of the connective tissue, just as in carcinoma the underlying epithelial cells in some cases grow upward and form a secondary connection with the overlying epithelium. If this objection were true, the origin of the connective tissue cells from the epithelium would be only an apparent one. But if the objection were valid, we should expect to see two distinct kinds of cells, the one going upwards and the other downwards, and the one possibly destroying the other. In the papillæ formation the connective tissue would, in that case, grow up into the epithelium and destroy it. To this objection we may answer as follows: In the first place, in very many cases we do not notice two distinct types of cells, but we notice that the epithelial cells are slowly changing to connective tissue cells. The epithelial cells seem to vanish at other places, and their nuclei take the form of connective tissue nuclei, but the connective tissue cells never penetrate into the epithelium and destroy its cells; hence papillæ cannot be formed in this way. In some cases one does observe a sharp boundary line between the

epithelium and the connective tissue, but this does not contradict my view, as I have already explained.

In case the sections were cut thick, this fact was taken into consideration, so that objects lying in different layers were not regarded as having connection with each other. In describing the phenomena of papillæ formation, the effect of cutting the papillæ obliquely was also thought of. I have shown the above described phenomena to several competent observers, and they agree that the explanation offered is justified.

Of course, to arrive at the conclusion that connective tissue is formed from epithelium, many sections must be studied and the transplanted skin must be examined in all its different stages. When the study is thus pursued, the facts obtained are explainable only by the manner stated, and no facts have been found that contradict this explanation. That the epithelial cells are different from connective tissue cells is no more proof against this explanation than the difference existing between cartilage cells and perichondrium cells speaks against the derivation of the one from the other.

Pathologists are at present inclined to believe that embryological facts make it impossible to accept the view of a transformation of cells from one germinal layer into those of another. This, however, does not appear true. A closer analysis of the term germinal layer, as has been given in a recent paper of Braem (*Biologisches Centralblatt*), shows us that the term has by no means such a fixed meaning as was formerly thought.

Thus far I have related the observations which show that connective tissue is formed from epithelial tissue. Of course, I do not mean to say that all connective tissue is thus formed, but I make this assertion only of the connective tissue beneath the epithelium. I shall now add a few conclusions to be drawn from the above mentioned facts. The first question which naturally suggests itself is, Does the normal epithelium form connective tissue? There is no fact, to my knowledge, which would make this impossible. Jarisch noticed the existence of crescentic nuclei below the epithelium. I have frequently seen epithelial cells having just such crescentic nuclei. The formation of such nuclei in the epithelium can be as follows: All the chromatin of the nucleus collects at the edge of one half of the nuclear cavity; the other half of the nucleus vanishes. As I have already said, the nuclei of the epithelium may under different conditions assume different forms, so that we cannot regard the form of the nuclei as a criterion of the origin of the cell.

Another conclusion which is forced upon us is that the scar tissue formed below the skin and mucous membranes is formed, at least to a great extent, from the epithelial cells. I gained this impression from experiments conducted two years ago, in which I observed the formation of scar tissue below the transplanted epithelium. Here one frequently sees that the transplanted tissue is raised up by the forming of connective tissue. Moreover, these facts also explain, at least in my experiments, the origin and formation of giant cells in scar tissue.

There is another point which I must mention. Very often the tissue wandering out from the epithelial tissue has the nature of sarcomatous tissue. In that kind of tumor called carcinoma the epithelial cells grow while retaining their epithelial structure. The possibility presents itself that certain spindle-cell growths beneath the skin may arise from epithelial tissue. The possibility that in scirrhous carcinoma the connective tissue may be formed from epithelium must be taken into account. If so, then the sharp distinction between ectoplastic and mesoplastic structures does not seem to be justifiable, and the present classification of tumors may lose some of its significance. But I do not wish to enter upon this subject at present.

The above described observations and the conclusions drawn from them formed a part of two preliminary publications on the metamorphosis and activities in tissues, published in the latter part of 1897. In the experiments there related, the results of which are in accordance with the facts stated above, I used some special methods. First I placed different nutrient media, such as agar and blood-serum, in various organs, to study the differing behavior of these tissues toward these culture media. It has been shown in the laboratory of Ostwald that these nutrient substances are easily penetrated by the fluids of the body. In a short series I transplanted tissues in different organs, not only transplanting the tissue, but also placing nutrient media between the transplanted and the original tissue in order to isolate it and to better observe the metamorphosis. Lastly, I tried to cultivate tissues outside of the human body (just as microorganisms have been cultivated), in order to arrive, by experimental means, at the conditions of growth. Also other experimental methods were used. Shortly after beginning this latter experiment I learned of the then recently published results of Wentscher, who had succeeded in transplanting and healing in skin which had been removed from the human body and kept for some time under unfavorable conditions. This transplanted tissue

afterwards showed mitoses. This, however, was an entirely different problem from the one underlying my experiments, which were made to see the active changes going on in epithelial tissue kept in nutrient media. The experiments reported have been carried on by me, and I hope soon to be able to report further results.

In the preliminary paper I also published an account of the transformation of the epithelial cells of the cornea into tissue closely resembling the cornea proper. I stated that this connective tissue originating from the epithelial cells stained more deeply with eosin. I described also that the endothelial cells of the descemetic membrane showed a similar metamorphosis. I stated that the nuclei included between these new-formed lamellæ were derived from epithelial cells, which formed the lamellæ. In a recent paper on the fate of giant cells (*Journal of Experimental Medicine*, vol. iii, November, 1898) Professor Hektoen confirms the metamorphosis of the endothelial cells of the descemetic membrane. He finds the new-formed lamellæ stained more deeply with eosin, and traces the origin of the nuclei between the lamellæ to the endothelial cells of the descemetic membrane forming the lamellæ.

THE MICROSCOPICAL DIAGNOSIS OF TRACHOMA.

BY E. F. SNYDACKER, B.A., M.D., CHICAGO.

Usually the diagnosis of trachoma is easy. In the majority of cases the skilled observer detects the disease at a glance. At times a certain diagnosis is not only difficult, but even impossible. The different forms of follicular conjunctivitis may closely simulate the disease; this is especially true in those forms which are found in anemic schoolchildren. Among the debilitated, especially such as have suffered from malaria, there are forms of conjunctivitis accompanied by desquamation of the corneal epithelium, and even severe ulceration, where the most experienced are at fault.

In the early stages of trachoma, before the disease has assumed its characteristic aspect, it is often very important for purposes of treatment, prognosis, and isolation that a diagnosis be made, which is impossible by mere inspection. The classification of trachoma has hitherto been so loose and uncertain as to render hard and fast lines impossible. Any follicular inflammation of the conjunctiva which resisted treatment and persisted for any length of time has been regarded as a form of this disease.

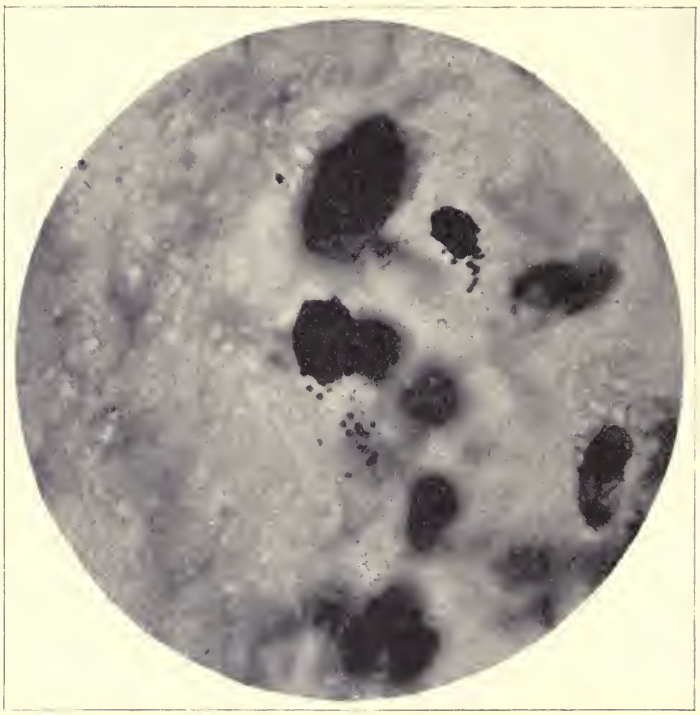
Trachoma has a constant cause. Its etiological factor is as characteristic as that of tuberculosis, diphtheria, or typhoid fever. The recognition of this fact gives us an accurate, certain, and scientific means of diagnosis.

Trachoma is due to a capsulated diplococcus, 1½ to 2 μ in length and 5 μ in breadth, which is not decolorized by the Gram method of staining, and whose septum at times has an affinity for anilin stains causing the diplococcus to simulate a bacillus. This organism is constantly present in the trachoma follicle and secretions, before astringent and antiseptic remedies have been employed. It is easily differentiated from all other germs. A small diplococcus in which a capsule can almost always be recognized, and which exhibits a characteristic reaction toward stains, can only be recognized by means of the microscope.

In gonorrhea, whether of the urethra or conjunctiva, the microscope is a very uncertain and unreliable means of diagnosis; to differentiate the gonococcus from the pseudogonococcus by this means alone is impossible—their morphology is identical and their reaction toward stains the same. I have found biscuit-shaped diplococci in the secretions of the conjunctiva, the nose, and the throat when there was not a single symptom present, and yet a purulent

conjunctivitis has time and again been diagnosed as gonorrheal, merely on the finding of diplococci. Where the trachoma germ is found, however, we may with certainty make a diagnosis, for no other germ answers to its description.

The method employed in suspected cases of trachoma is briefly as follows: When enlarged follicles are found (and they are usually present in this disease), one of these is expressed and its contents employed. If there are no follicles the secretions can be examined, though these are very unsatisfactory. The expressed follicular con-



tents are spread thinly and evenly over four cover-glasses; two of these are fixed ten minutes in absolute alcohol, two are fixed in a flame. One of each kind is now put through the ordinary Gram method of staining. The other two are stained according to the Gram-Weigert method, lithium carmine being employed as the counter-stain. In this way four slides are prepared by slightly different methods, whose results should coincide. Where lithium carmine is employed as a counter-stain the bacteria are shown as a deep violet on a bright carmine background.

On account of the minute size, and at times the scarcity, of the organisms great care and diligence must be exercised in searching the different fields.

The microphotograph shows the trachoma diplococci as they are seen in a section of a nodule. Owing to the affinity of the septum between the diplococci for anilin stains some of them simulate bacilli. Around a few of them the gelatinous capsule can be faintly seen. The heavily stained elliptical bodies are cells repeatedly observed within the trachoma nodule, which resemble myelocytes.

BOOK REVIEWS.

A Systematic Treatise on Materia Medica and Therapeutics. By Finley Ellingwood, of Chicago. Chicago: Medical Press Co., 103 State St. 1899.

On the title-page we are informed that this work is prepared with reference to the most direct action of drugs. By this the author understands, we take it, the symptomatic action of a drug. The author divides drugs into ten groups, which include: (1) agents acting on the nervous system; (2) on the heart; (3) on the respiratory tract; (4) upon the stomach; (5) upon the intestinal glandular organs and upon the intestinal canal; (6) upon the blood; (7) upon the genito-urinary organs; (8) upon the female reproductive organs; (9) used in the control of hemorrhage (hemostatics); (10) upon the micro-organisms and parasites. As we have often said in these columns regarding classifications, none will ever be quite satisfactory in materia medica. A classification based on the properties of drugs or their botanical description is so defective as to prove a hindrance to the memory. Some sort of a classification based upon the therapeutic action is most practical. The one adopted by Dr. Ellingwood seems to be about as useful as any that could be employed.

Each of the groups above named is subdivided into a number of divisions, and these again into chapters which include agents having common actions. Thus, opium, morphine, codeine, conium, and cannabis indica are grouped together. Chloroform, ether, nitrous oxide, ethyl bromide, eucaine, and menthol form another chapter. It seems to us that this is a natural and appropriate arrangement and a considerable aid to the memory, which is after all the only purpose of classification. As we have said elsewhere, any classification is better than a mere alphabetical arrangement. The latter can only be useful for reference, a purpose fully met by an adequate index.

The work is of special value from the studies of the newer botanical additions to the materia medica. It is well issued, is compact and systematic, and forms an acceptable addition to the literature of materia medica and therapeutics.

Massage Treatment (Thure Brandt) in the Diseases of Women. By Rob. Ziegenspeck. Translated by F. H. Westerschulte. Chicago: Published by the Translator. 1898.

This translation of Ziegenspeck's work on the Brandt method places a fair statement of Brandt's methods before English readers. Heretofore the statements which have filtered through the periodical medical press have been fragmentary, and the opinions which have been passed upon Brandt and his work have too often been bits of special pleading. This translation places the entire method within the easy grasp of the general practitioner. That there is much in the method of Brandt that is of value in pelvic diseases can scarcely be doubted at this date. Since the late wave of conservatism in surgical gynecology, it seems timely that this method should receive more extended study; that it is a cure-all is not to be expected, or that the expectations of its most enthusiastic followers will be reached is hardly to be looked for. That it does

have a certain range of usefulness none but the most enthusiastic devotees of the scalpel will deny.

It is to be regretted that the present translation does not form a more attractive volume. The English is of the German-American type, in which the Teutonic idiom and construction masquerades in English attire.

RECORDS OF URINARY EXAMINATIONS. By Harry Morrell, M.D., C.M. Hartford, Conn.: J. B. Brown & Co. 1898.

This book consists of 100 charts for urinary examinations, and is adapted to records in both hospital and private practice. Each chart has a perforated margin by which it can be easily removed from the book, and it is intended that a copy shall be made with the aid of a sheet of carbon-paper. Each chart has a space for date, name, and age. The urine is considered from the standpoint of physical characteristics, which comprise the following: Quantity in twenty-four hours, specific gravity, solids, transparency, color, reaction, consistency, and odor. Then follows the physiological constituents in solution, which comprise urea, uric acid, hippuric acid, creatinin, coloring matter, xanthin basis, chlorides, sulphates, phosphates, phosphoric acid, indican, and oxalic acid. The pathological constituents include albumen, peptone, mucin, alkapton, sugar, bile, acetone, and the diazo-reaction. Then follows a space for microscopical examination and a place for recording the bacteria. The whole is accompanied by an index for recording the names of patients. Taken all in all it forms an exceedingly convenient record for systematically gathering the data regarding urinary examinations.

A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. By Louis A. Stimson, A.M., M.D. Philadelphia and New York: Lea Brothers & Co. 1899.

The work of Stimson is in one sense a second edition of the volumes published in 1883 and 1888, but the present volume has been so far rewritten as to be practically a new work. Among the 326 illustrations are twenty skiagraphs. The author says that *x*-rays have been of value in showing the details of certain fractures, especially at the wrist, elbow, and ankle. They have not yielded much information of practical value which could not have been obtained by palpation. Probably their usefulness will increase by improvements in methods and apparatus, but at present the information which they give needs to be sifted with great care from among many misleading appearances.

The work is divided into two nearly equal parts, the first dealing with fractures and the second with dislocations.

The book is handsomely issued by the publishers and forms the best work in the English language on fractures and dislocations.

A PRACTICAL HANDBOOK ON THE MUSCULAR ANOMALIES OF THE EYE. By Howard F. Hansell, A.M., M.D., and Wendel Reber, M.D. Philadelphia: P. Blakiston's Son & Co. 1899.

This small work of 173 pages, dealing with muscular anomalies, has had its origin in a short series of lectures delivered at the Philadelphia Polyclinic. The imperfections of binocular vision have received much study of late, so that a practical working manual dealing with these anomalies is much needed. The first two chapters deal with the anatomy and physiology of the ocular muscles.

and innervation. Part II deals with ocular palsies. Part III, including the larger portion of the work, discusses the various forms of heterophoria. The work closes with a brief description of tenotomy and advancement.

The work, while technical, is clearly and concisely written and is an excellent statement of our knowledge regarding this somewhat difficult subject. To those interested in the study of refraction the work cannot fail to be interesting. It is well issued by the publishers.

A Text-book of Mechano-therapy. For the Use of Medical Students and Trained Nurses. By Axel V. Grafstrom, B.Sc., M.D. Philadelphia: W. B. Saunders. 1899.

The title of this work, "Mechano-therapy," is followed by the words "Massage and Medical Gymnastics" in parenthesis. Just why these two latter words were not used in the title of the work, instead of the ill-assorted pair which we find there and which it is thought necessary to define, is beyond the imagination of the reviewer.

The system followed in this work is that practiced in the Royal Gymnastic Institute, Stockholm, Sweden, with such modifications as are recommended by prominent teachers. The work is well arranged for the use of students and nurses, and will prove a practical advantage to those wishing to acquire the art of massage. It is doubtful, however, if any book can supply the place of practical instruction in the application of this treatment.

An Introduction to Pathology and Morbid Anatomy. By T. Henry Green, M.D. Revised and Enlarged by H. Montague Murray, M.D. Eighth American Edition. Revised from the Eighth English Edition, by Walton Martin, Ph.B., M.D. Philadelphia and New York: Lea Bros. & Co. 1898.

This last edition of Green's Pathology equals in every respect those that have preceded it. From the first edition this work has taken a high place in the estimation of the medical public. No English work on pathology has been so universally used as a text-book. It has gradually increased in size from the first edition, which contained a little over three hundred pages, to the last volume, which includes 582 pages. The same general arrangement has been maintained as in the earlier editions. The illustrations are well chosen, and the press work and typography are all that could be desired.

A Clinical Text-book of Medical Diagnosis for Physicians and Students. By Oswald Vierordt, M.D. Authorized Translation by Francis M. Stuart, A.M., M.D. Fourth American from the Fifth German Edition. Philadelphia: W. B. Saunders. 1898.

The work of Professor Vierordt has been so long before the American medical public that extended comment upon this, the last, edition is quite unnecessary. The first edition of this book was received with great favor, and since that time it has continued to hold its place as one of the leading works on physical diagnosis. This last edition, like the preceding ones, is handsomely illustrated, numerous colored plates being introduced in the text, particularly illustrations of the color reactions of bacteria. Practically all the newer methods of diagnosis which have been introduced during late years are included, and the work is thoroughly up to date.

SAUNDERS' POCKET MEDICAL FORMULARY. By William M. Powell. Fifth Edition. Fully Revised. Philadelphia: William M. Saunders. 1899.

This small pocket formulary is made up of 289 pages; it is bound with a flap to admit of its being carried in the pocket. Throughout it is interleaved with blank pages for notes. It contains 1744 formulæ, arranged alphabetically to avoid the use of an index. A work of this kind has a certain range of usefulness. Primarily, we presume, it is intended for the beginner in medicine, and yet here is just where it may do harm. For example, the term "tabes" as designating disease of the spinal cord is not used, but instead prescriptions for that condition are grouped under "locomotor ataxia." There is apparently no recognition of the fact that ataxia is a mere symptom, having its origin in several pathological states. For this condition four formulæ are given, one containing nitrate of silver, another strychnine, a third physostigmine, and a fourth antipyrin for the pains. The strychnine is certainly contraindicated in tabes, the most frequent form of ataxia which we are called upon to treat. We have in italics, below this prescription, the statement that this is to be given when the system is saturated with silver. In the majority of cases of spinal tabes it will do harm rather than good.

Notwithstanding, the work has a certain range of usefulness, but this we think is greater for the experienced medical man than for the beginner. For those who are well grounded in therapeutics, who have good judgment, these formulæ will prove very suggestive. They are gathered for the most part from standard medical writers, and include such names as Brown-Séquard, Brunton, Dujardin-Beaumetz, Dunglison, Erichsen, Kaposi, Ringer, Bartholow, Tuke, and Sée. There is appended to the volume a dose table and one of incompatibles, together with tables and much useful information in obstetrics, surgery, and dietetics.

THE MEDICAL NEWS POCKET FORMULARY FOR 1899. By E. Quinn Thornton, M.D. Philadelphia and New York: Lea Brothers & Co. 1899.

The author, in preparing this volume, states that it is not intended that it shall replace individual thought on the part of the practitioner, nor individual judgment as to the character, quantity, and combination of remedies selected in the treatment of a given case. That there is a legitimate field of usefulness for a work of this character he regards as self-evident, for even the best informed practitioner may at times overlook an appropriate drug.

With the limitations of such a book clearly in mind its usefulness cannot be questioned; the fear is, however, that many will rely on the formulæ to the exclusion of that independent judgment which is so necessary in the application of drugs to the treatment of disease. As a substitute for a good work on therapeutics and materia medica such a work cannot be too severely condemned. As a useful adjunct to a systematic work on therapeutics it will be found to be of distinct value.

The formulæ in this work are given in both the metric and apothecaries' measures; the origin of the formulæ is not given, from which one would judge that they are original. We, however, see some that bear a striking resemblance to old favorites.

The little volume is conveniently bound with a flap for carrying in the pocket.

EDITORIAL COMMENT.

THE ASSOCIATION JOURNAL.

A somewhat critical disposition appears in various papers of the medical press as to the change in the editorship of the *Journal of the American Medical Association* made necessary by the death of Dr. Hamilton. Of course, the members of the medical profession as well as the press feel a justifiable interest in the personality of the editor soon to be chosen, as well as the tone which his individuality will give to his conduct of the *Journal*. As to the criticism of the former conduct of the *Journal*, it may be remarked that all editors, both of the secular and the special press, are familiarized by experience with the ease with which outsiders can edit to their own satisfaction those papers to which the really responsible editors are giving time, toil, and talent. It is one of the easiest things in the world to edit a journal after it has reached its subscribers; to so edit it from the ground up as to make sure of interesting a large and varied subscription list, that is a different matter, a thing far harder to do, as will be acknowledged by those who have tried.

The *Journal* occupies a peculiar position among the medical papers by reason of its being truly the journal of the association whose name it carries. Other medical journals may assume a leadership, a guidance of the profession in the direction of some novel policy or practice. But the *Journal* must be what its title claims for it—it must be the day-book of a certain medical organization. When this is fairly comprehended it will be seen that the real leader is the Association itself; the *Journal* is only the mouthpiece of such leadership. It would be alien to the basic conditions of its existence if the *Journal* should assume to formulate opinions which had not already been developed in the Association itself. This comment is by no means supererogatory, for the burden of much of the criticism of the *Journal* now current is that it has been editorially a follower rather than a leader.

To lead is to fight and to bear not only the burden of the conflict, but its recrimination as well. The true appreciation of the relation of the *Journal* to the medical profession of America inhibits the possibility of setting it up in a polemical attitude. Its position is more wholesome, its influence is more effective, by maintaining it

among all other medical publications in the dignified position of arbiter and judge, watching the course of progress, securing fair consideration, free from the fever of faction, and announcing unbiased decision.

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Since the above was written the trustees have met and appointed Dr. George H. Simmons editor of the *Journal.* If we can judge from the work which he has done upon the *Western Medical Review*, he brings to the *Journal* a ripe editorial experience, and we confidently predict that under his management its influence will be extended and that a marked improvement will be shown in its typography and subject-matter. By this we would not be understood as implying criticism on the past management of the *Journal;* we have never expressed criticism of it, or of its editorial management, and we shall not begin at this late day. Whatever we have had to say has always been suggested to its trustees or its managing editor; sometimes these have been asked, and again volunteered, usually the latter; but we shall never forget that the *Journal* is our journal, its trustees are our trustees, and its editor is our editor. A criticism of it is, in effect, a criticism of ourselves.

We bespeak for the *Journal* and its new editor a hearty support on the part of the Association and the profession, to the end that this may be made one of the leading and most influential publications of the world.

BAD BEEF AND THE ARMY RATION.

Reports from the committee of investigation and numerous other sources show that a considerable quantity of bad beef was sent to the front during the late war. Part of it was described as "embalmed" beef, though just exactly what is understood by this term it is difficult to learn. It seems that by "embalming" is meant a treatment of the beef by chemicals. It is stated that a half-million pounds of beef was sent to Porto Rico in one ship, and it arrived there in such condition that it was unfit for use. At the time that this supply reached Porto Rico the soldiers were fifty miles from the coast, in the mountains, without adequate means of transportation; the result was that the meat was thrown overboard.

The inadequacy of the official army ration for the conditions that were met with in Cuba and Porto Rico is now so apparent that the subject scarcely calls for comment. The wonder is that it was not

recognized earlier, when a mere tyro in medicine could have pointed out glaring defects. Doubtless the army ration is well adapted to men living on the high plateaus of mountains. Perhaps it is fairly well tolerated by the soldiers in the southwestern States, where the atmosphere is dry and a free out-of-door life reduces to a minimum its shortcomings.

The maintenance of garrisons in our new possessions and the possibility of campaigns in these countries make it highly necessary that the diet of our soldiers should receive more extended study. The subject should be taken up from the standpoint of transportation, temperature, and all other conditions surrounding the soldier. We think that for hot countries large quantities of salt meat are not the best ration; at the same time the transportation of large quantities of fresh meat is practically impossible. It is therefore necessary to study the substitutes for the meat diet, and it is along this line that the best and most practical solution of the army ration will be found.

As showing the alarming increase of dietetic knowledge which is invading the office of the Commissary-General of Subsistence of the United States Army, we would call attention to a recent article in the *New York Times* giving certain extracts from a "Manual for Army Cooks" which has been prepared in that office: "In it may be found directions for the preparation of deviled crabs, apple-dumplings, and sundry other rare products, including mushrooms. As to the latter, the Manual gives directions for distinguishing the edible sorts, as follows: 'They first appear of a round form on a little stalk; they grow very fast, and as the size increases the under part gradually opens and shows a fringy fur (called gills) of a delicate salmon color. After the mushroom is a day old this salmon color changes to a russet or dark brown. They have an agreeable odor, the flesh is compact and brittle, and the skin is more easily peeled from the edges than in the poisonous kinds. The seeds or spores are white, and for the most part roundish or oval. An edible mushroom should have not only one of the above characteristics, but should combine them all.' This is a pretty safe rule, for if one follows it he will certainly never be poisoned by mushrooms, for he will never eat any. Such a mushroom is not yet known to science. If the Commissary-General of Subsistence thinks otherwise, let him ask some mycologic sharp to give him the name of the mushroom that combines all the above characteristics, especially the salmon turning to brown gills with 'white spores.' In the directions for detecting poisonous mushrooms the Manual says: 'If a white peeled

onion is cooked with mushrooms and turns black, or if the spoon used for stirring them while cooking turns black, it is safest not to eat them.' Just so, but the converse is not true—if the spoon should not turn black it does not follow that the mushrooms are wholesome. The safest rule for the army boys to follow will be to let the cook gather, prepare, and eat the mushrooms himself. If he eats and lives, all right; but if he does not, let them change the cook and try it again.''

ELECTROCUTION.

The execution of condemned criminals seems to possess a fascination for the average medical writer. We have long resisted our desire to say something on this subject, but at last yield to what seems to be an almost universal tendency.

Seldom has an execution taken place under the New York State law, in which electricity has been employed as the lethal medium, which has not called forth some comment in medical journals. The recent execution of Martin Thorn, in that State, was followed by an article by Joseph Alan, in the *Atlantic Medical Weekly*, in which the view was taken that Thorn was not killed by the passage of the electric current, but that he was effectually removed from the sphere of his criminal propensities by an autopsy which was made immediately afterward. This article was commented upon in an editorial in the *New York Medical Journal* of October 1, 1898, and was followed later by a letter from W. M. Hutchinson, in which it is stated that he was present at the execution of Thorn and he thought that death was practically instantaneous. Immediately after the application of the current the pupils were widely dilated and did not react to light, while all the ordinary signs and appearances of death, excepting putrefaction, were present. Consequently, all the facts in the case banish the suspicion that death may have been consummated on the autopsy table. The contention of Dr. O'Neil, that the autopsy, which was to follow each execution, was an invention for the purpose of aiding the sometimes impotent means of inflicting the death penalty, he rejects as unworthy of consideration. The propriety of an autopsy he finds in the opportunity it gives for studying the effects of currents of high potential upon living organs, and in the advancement of our studies in criminology and degeneracy. He finds in this method of executing criminals a perfectly justifiable procedure, painless and practically instantaneous in its operation.

We are tempted to depart a little from our subject and refer to the striking differences of opinion between Drs. O'Neil and Hutchinson. They have come to diametrically opposite conclusions from observation of the same data. Perhaps we might leave this matter to the wise old adage that doctors are prone to differ, and usually the better the doctor the greater the difference.

In the *Monthly Retrospect of Medicine and Pharmacy* of December 18, 1898, an editorial writer decries what he terms the "humanitarian absurdities" of electrical execution. He evidently leans to the view that hanging has superior advantages over electricity as a means of taking human life. He says the intent and justification of the judicial taking of life is not to wreak vengeance on the man who has sinned against the law, but to protect society by deterring others from following his example. The more repulsive an execution is made the greater its deterring power, providing the law does not overleap itself by downright cruelty in its methods. There is no reason for supposing that death by hanging is, if the execution be properly performed, a painful one; it should be instantaneous, and even in the rarest cases but one or two moments of consciousness would be left to the sufferer.

The writer begs the whole question when he says, in the closing paragraph, that no one really knows whether he who is electrocuted suffers more or less than he who is hanged. The chief argument against electrocution he finds in the complication of the process and the scientific pyrotechnics which surround it. If these are repulsive to the average man, then, according to the writer, it certainly ought to have a deterring effect; if not, then we do not see the validity of the criticism. That the writer finds in hanging a commendable and altogether esthetic way of doing a disagreeable thing is really a matter of taste.

While we have troubles of our own, it is consoling to think that our neighbors are similarly afflicted. The literature of electrocution in this country, while considerable, is but a drop in a bucket with what has been written upon the method of decapitation employed in France. Paul Loye made it a subject of an experimental study and wrote a book on the subject, "Mort par Décapitation." Loye was of the opinion that the majority of condemned criminals executed by the guillotine were in a state of syncope at the fatal moment. The *Journal de Médecine de Paris* of December 18, 1898, commenting on the latest execution in Paris, that of the assassin Carrara, says that he was in a state of syncope at the time of the execution. There was practically no hemorrhage from the severed neck until after the

body had been moved, when two strong jets of blood were suddenly forced to a height of about one meter. This, the writer thinks, showed that at the time of execution there was complete cardiac paralysis, and it was only later, when the heart resumed its action, that one could be sure that the law had been vindicated, and that they had not severed the head of a man already dead.

Some years ago we remember to have read in a French journal of ingenious experiments made upon the heads of decapitated criminals by a French observer. He claimed that after decapitation consciousness was only slowly extinguished in the severed head. The basis for his opinion was furnished by a particularly hardened specimen of the criminal type, who had it impressed upon him during the last days of his existence that immediately after his execution he would be asked if he understood what was said to him, and if so, necessarily being deprived of the power of speech, he should close one eye. The observation was made as planned, and when the severed head was interrogated it responded with a palpable wink, quite startling to the bystanders.

Certainly, if there is a difference of opinion so wide that one observer thinks that criminals are practically dead before being decapitated and another thinks that they are conscious for a considerable length of time afterward, it will be impossible to form a definite conclusion as to the efficacy of electrocution. It must be admitted, however, that these methods are very damaging in their effects—at least they seriously impair the testimony of the chief actor in the performance, thus eliminating the best evidence that could be offered in solution of this vexed question.

It has seemed to us that it might be wise to give the condemned man some choice in his method of taking off. If it were left to us to decide how we should be executed, we should choose the somewhat slow, but perfectly effectual, method of natural decay of the body which comes of advancing years. There is much that commends such a method, providing it were followed by an autopsy and the gathering of scientific data. We wonder that so obvious and simple a solution of the whole matter does not commend itself to legislative bodies. In early times, in ages which we courteously term less civilized than our own, it was the custom to hurry a convicted criminal to execution; at the most but a few days, sometimes a few hours, elapsed between the conviction and the infliction of the penalty. It is true mistakes were sometimes made which were difficult to rectify.

The broader humanity of modern times has done away with this

unseemly haste, so that in many cases years elapse between condemnation and the infliction of the death penalty. A moderate extension of this tendency would permit of the infliction of the death penalty by the natural decay of the vital powers. It would certainly be devoid of all the nerve-straining elements which beset the modern infliction of the death penalty, and would do away with all the vexed questions which surround it. It is, we feel sure, the only solution that will give perfect satisfaction to the condemned, conserve the feelings of relatives, and keep intact the esthetic sense of an advanced and advancing civilization.

AUTHORITIES IN MEDICINE.

It frequently happens in courts of law that physicians testifying as expert witnesses are asked if a certain book is an accepted authority on a particular subject. Sometimes a prominent writer is named, and the witness is asked if he is an authority. The purpose of such questions is usually to lay a foundation for impeaching the witness's own testimony by showing that he differs from books which are believed to pronounce an authoritative opinion upon the subject-matter. The questions may be asked with a view of supporting the testimony of a witness, by showing that it is in accord with works which are accepted as authoritative by the profession.

The tendency of modern decisions is to exclude books. Their use is, however, allowed in framing cross-examination in many cases. Great confusion has arisen in such examination over the use of the word "authority." To the average legal mind this conveys a very different idea from that which it carries to the scientific student. In the legal sense we have no authorities in medicine. An opinion by a supreme court in law is authoritative, whether it be right or wrong. Until it is abridged or altered it is binding upon the lower courts. In this sense we have no authorities in medicine, particularly in such rapidly advancing subjects as physiology, pathology, and therapeutics. The opinion of a writer is of no greater value because it is written and bound in a volume; it remains his opinion, and is of no greater weight than if it were uttered orally. As a considerable time must elapse from the time the opinion was written until it reaches the hand of the reader, there is no means of knowing it is his opinion at the time the quotation is made. It is allowable for writers in medicine to change their opinions from time to time, the same as those who do not contribute to medical literature.

There are a few works in medicine that may be safely admitted as authoritative, namely, the Pharmacopœia, Gray's Anatomy, and our standard dictionaries. In answering as to medical authorities, if we go beyond these, we shall certainly be involved in misconceptions which will only confuse one's testimony. The only safe and correct thing upon the witness-stand is to say that there are writers who have opinions based upon extensive study which are of value in the practice of our profession, but that there are no authorities within the commonly accepted meaning of the word.

THE DEGREE OF "DOCTOR OF OPHTHALMOLOGY."

We have before us the announcements of two colleges located in Chicago which confer the above degree. One seems to encourage instruction by correspondence. Its course consists of a series of lectures which if pursued with diligence and an earnest desire to learn the science of optics will enable one to become a thorough and practical optician. They further guarantee to teach as much as any other institution and more than a great many, no matter where, when, or what their method. The course is intended to cover a period of eight weeks, but we are informed that if a student applies himself he may thereby lessen the time. An outline of the course is given, which includes eight lectures. The first deals with optics and their practical application, and the last with the ophthalmoscope, retinoscope, asthenopia, orthophoria, heterophoria, strabismus, prisms, drugs, diseases, and ophthalmoscopic diagnosis.

Perhaps the most important rubric is the following:

ISSUING DIPLOMAS AND
CONFERRING OF DEGREES
AT THE CONCLUSION OF THE TERM.

The diplomas, we are informed, are 17 x 22 (it is not stated whether feet or inches), and present a handsome appearance. "Going," it is said, "as they do from this great city, they carry prestige with them and always leave a good impression." The fees for this course are placed at the nominal sum of $25; it is not definitely stated whether postage is, or is not, included. It is stated in the announcement that this is a regularly incorporated institution, hence the degrees are legal.

Another school is organized on a somewhat different plan. Its announcement is more ornate, but the range of information is substantially the same, though attendance upon the school is apparently

required. The curriculum is divided into six days, thus following the Scriptural injunction, "Six days shalt thou labour and do all thy work." A page in the announcement is devoted to what is taught on each day. To avoid confusion they are printed in different colored inks; thus the first day is in a striking red, the second is appropriately set forth in green, the third in a pale brown, the fourth appears in a refulgent red, the fifth, which includes the pathology of the eye, in a deep purple, the sixth, in which there is a recapitulation of the entire curriculum, in green. At the bottom of the page is a beautiful scroll containing the word "finis."

The closing page of this announcement is printed in a somber black and contains a word about the degree. Nothing is said as to the size of the diploma, but we are told that the word "doctor" in its original sense meant teacher. There is also a statement that this is a regularly incorporated institution, and therefore its degrees are legal. It is this latter clause that gives the announcement a sting. It is true that these colleges are incorporated and that the great State of Illinois confers through these corporations the degree of "Doctor of Ophthalmology." The latter is conveniently and briefly written by its fortunate possessor, "Oph. D."

"TEMPORA MUTANTUR, ET NOS MUTAMUR IN ILLIS."

——— ———, Feb. 21
——— 1899

——— Medical College

Gentlemen: Dear Sir:

It is with pleasure that I write to inform you that I as well as two more of my brothers wish to enter your College the coming fall but owing to the restrictions you make in the educational line. we are a little afeared that we are not far enough advanced. for all I have a couple older brothers that just graduated a couple years ago from such a college as yours where they ask nearly the same requirements as you do for admission. and they neither one of them had the education that we have got. to tell you how far along we are will say that we just got Started in the High School which would take us three and one half years to complete if we had stood by it. but have given it up know. while my other two brothers which are Doctors know the best one never got through the eight grade while the other one never went to a town school at all and they tell me that you have to ask these requirements that you do to protect your college and they think that we can get in your college without any trouble

at all of corse I am well aware of the fact that your college is the best in this part of the country hence the harder the requirements. know as such is the case I or rather we would be glad if you people could make arrangments so as to let us enter your College and we will do what we can for you should you succeed in doing so I will guarantee that at least two of us will attend with a great possibility of three Hoping to receive a favorable reply by return mail I am

Yours Truly

P. S. One of our neighbor boys is in the same boat as we that would like to attend such a college should you make arrangements for us we could no doubt take him with us should you desire.

MORTALITY FROM SURGICAL OPERATIONS.

Modern surgery has almost eliminated deaths due to operations, excepting those dependent upon shocks or poisoning by anesthetics. It is highly probable that these two conditions are closely related—the longer the anesthesia, the greater the amount of the drug employed, whether ether or chloroform, is a factor in the development of shock. We would not be understood as intimating that this is the only important element, but it is one of them.

For a quarter of a century surgical effort has been directed almost exclusively to the study of the means of preventing hemorrhage and infection. Fortunately, the improved technique of later years has practically eliminated these factors from surgical operations. Nothing like the same study has been directed toward the prevention of shock, and one element in its production, the quantity of anesthetic employed and manner of its administration, has received very inadequate consideration in American hospitals. So far as we are aware there is but one hospital in Chicago that has a trained anesthetist. The custom, we believe, in most hospitals is to have the anesthetic given by the youngest interne, whose practical experience amounts to nothing at the beginning of his hospital services. The junior interne not only gives anesthetics, but acts as dresser in the hospital wards. At the end of six months he is promoted to the medical side, and his place is taken by a new man. In this way there is no accumulation of hospital experience in the administration of anesthetics.

In the Chicago hospital in which a trained anesthetist is employed it is a matter for comment that there is a striking freedom from complications attending the administration of anes-

thetics. Out of 1000 cases of anesthesia in this institution only six presented complications that required artificial respiration.

It is singular that the necessity for skilful administration of anesthetics has not been more fully recognized in this country. In England great attention is paid to this matter, and all of the larger London hospitals have their regular anesthetists; the position is one of recognized importance.

INCREASE OF MEDICAL MEN IN FRANCE AND GERMANY.

In our February issue we referred to the *crise médicale* which has overtaken the French Republic, and which seems to be interesting the medical mind almost to the exclusion of *l'affaire Dreyfus*. M. Noir, in *Le Progrès Médical* of November 5, stated that notwithstanding the total number of medical men had decreased in France, the difficulties of obtaining a livelihood by the practice of medicine had greatly increased. The same editorial writer, in *Le Progrès Médical* of February 4, 1899, speaks of the crowding of the profession. The last register of French physicians shows that there was an increase in the number of medical men in France from 15,984 in 1898 to 17,735 in 1899, an addition of 1751, which the writer regards as a very considerable augmentation. The increase is especially marked in the larger cities, Paris having gained sixty-two practitioners in the last year and Lyons fifty-seven. While this is not reassuring he thinks it would be wrong to attribute it to causes peculiar to his own country, as he says the same phenomenon is to be noticed in all civilized nations. He seeks in vain for an adequate remedy and discusses the proposition that has been advanced by some leading members of the profession encouraging the exportation of French physicians to countries more in need of medical services. He does not think that this will prove to be a remedy for existing conditions, which must be met by much more radical measures.

A report of the present number of medical men in Berlin and its suburbs shows that there are 2233 physicians registered, an increase of thirty-seven in the last year; this gives a proportion of one physician to 751 individuals. In 1825, Berlin had 191 physicians; in 1849, 515; in 1867, 785; in 1876, 838; in 1887, 1040. The proportion in the various years was: In 1825, 1 to 1153 inhabitants; in 1849, 1 to 823; in 1867, 1 to 913; in 1876, 1 to 1154; in 1887, 1 to 1191. It will be seen from these figures that there was a relative increase which reached its height in 1867, after which there was a

decline. In the last twelve years the number of physicians in proportion to the population has increased more than one-third. There is a striking similarity in the statistics of Germany and France, and they both show a marked increase in the number of medical men during the last decade.

THE HOT PACK.

The modern view that many diseased conditions depend upon an intoxication for their production is receiving increased attention. This was a necessary postulate of the recognition of germs in the production of disease. The term autointoxication has also been employed to designate a perverted secretion of cellular elements. Less importance is daily attached to that *omnium gatherum* of etiology, uric acid. The importance of elimination in the treatment of diseased conditions cannot be overestimated, whatever theory be adopted regarding the origin and character of the intoxication.

Foremost among these means we must place the hot pack; efficiently done, it is a marvelous stimulant of the emunctories. Not alone does it increase the activity of the skin, but it is one of the best of diuretics. A teacher in the writer's student days advised in very sick children, where one did not know what was the matter, to give a hot bath; it would never do harm, and in a vast majority of cases would be of benefit.

The hot pack has a greater range of usefulness than has yet been accorded to it. In febrile states it is invaluable, and may supplant the cold bath in typhoid, in some cases.

THE RELATIONS BETWEEN ERYSIPELAS AND ACUTE ARTICULAR RHEUMATISM.

Of the precise etiology of acute articular rheumatism conclusive knowledge is wanting, though it is probable that the disorder is of infective origin. That no single cause can be held responsible for acute polyarthritis must be evident, as this condition may arise in connection with numerous other disorders, such as scarlet fever, smallpox, influenza, and other infectious diseases. The question may then fairly arise whether what is designated as acute articular rheumatism does not really represent a group of affections of diverse etiology.

It has long been known that occasionally erysipelas is complicated by arthritic lesions, which in some instances have been

recognized as metastatic, and in others have been thought to be independent or intercurrent. As an illustration of the latter group of cases Monteux (*Revue de Médecine*, 1899, No. 1) reports a series of eleven cases of erysipelas, in which some of the patients presented a previous rheumatic history, while others exhibited manifestations of the arthritic diathesis, either personally or in their ancestry, and still others were neither rheumatic nor arthritic. In the latter it was thought that the erysipelas was responsible for the development of rheumatism.

This acute polyarthritis following erysipelas usually sets in during convalescence, as desquamation is taking place, from a day to a week after defervescence. The temperature rises again, the pulse is accelerated, and various joints become successively painful, red, and swollen. Characteristic acid sweat takes place, and cardiac complications may occur. The salicylates afford speedy relief.

The pathology of this disease cannot be stated; the clinical evidence must alone be considered in reaching a conclusion.

THE USE OF BLUE GLASS IN THE DIAGNOSIS OF SYPHILIS.

January 12, 1899, Jullien reported to the Society of Dermatology and Syphilology, of Paris, that he had used blue glasses for several years in the diagnosis of syphilitic eruptions. He uses a simple binocular fitted with cobalt blue glasses and a moderate illumination of the surfaces to be examined. By this means all of the red and yellow rays are excluded and the entire surface presents a blue coloration. Observed in this way an eruption has a deeper tint than the surrounding skin. This sign appears before the eruption can be made out with the unaided eye, and it is present long after all signs of the lesion have disappeared. He does not claim that he can diagnose syphilis at a single examination, but he claims that it is an exceedingly valuable aid in determining the nature of an eruption, though the observations must frequently extend over a considerable period of time. He claims to have demonstrated discolorations of the skin months, or even years, after they had apparently disappeared, under simple ocular inspection.

In this connection we would call attention to an observation which we believe was first made by G. Frank Lydston, that an aid in differentiating specific from non-specific eruptions was obtained by observing them from a distance, or, in other words, under a less perfect illumination. A specific eruption under these circumstances appeared to stand out more distinctly than when the observer's eye

was close to the surface. He claimed that this was a valuable aid in diagnosis.

The observation of M. Jullien is certainly of interest and points to the possibility of using this method in other cases where colors are to be studied. Possibly greater precision can be reached by separating certain rays of the spectrum. The method is worthy of further study.

RUBBER GLOVES IN OBSTETRICS.

In the surgical abstracts of this issue we refer to an article by Lockett on the use of gloves in surgery. His experiments show that the fabric glove is almost worthless, but that the rubber glove is a most efficient means of preventing infection from the hands.

We do not remember to have seen a reference to the use of rubber gloves in obstetrics, but if it has been mentioned there is no harm in referring to it again. Surgeons are almost unanimous in the belief that practically all surgical infection is due to contact. Without doubt the most important source of puerperal infection is the hands of the physician or nurse. The experiments of Lockett show that rubber gloves are easily sterilized, and with reasonable care can be kept so in the average obstetrical outfit. In this connection we would refer to an abstract of G. E. Shoemaker's article (MEDICINE, vol. v, p. 166) on the prevention of puerperal infection in private practice. In our judgment that is one of the plainest and simplest statements of the duty of the general practitioner in this regard that has appeared for a long time. It does not aim at ideal results, and nothing is added in the way of show, but it is a plain statement of the principles of asepsis and their application, and is easily within the reach of the average practitioner. Most of the necessary apparatus can be found in the average household.

We would suggest, in addition to the outfit there described, that a pair of sterilized rubber gloves be included. It has been shown by Halsted that prolonged operations, involving extensive and delicate dissection, can be performed while the hands are protected in this way. The average obstetric procedure does not present the same difficulties encountered in a dissection of tissue, nor is the same delicacy of touch required. Indeed, there is no reason why they should not be employed extensively in obstetric work, particularly where an internal examination is required. Probably no single means would add so much to the safety of the lying-in woman as the use of rubber gloves, when making an internal examination.

ABSTRACTS.

MEDICINE.

A Peculiar Ependymal Cyst of the Cerebellum, and Some Remarks Concerning the Neuroglia.—

E. J. Mellish and Maximilian Herzog report an interesting and rare case in the *Chicago Medical Recorder* for February, 1899. The clinical history is given by E. J. Mellish.

The patient was a girl seven years old, of good family history; no evidence of hereditary venereal disease. This child seemed less rugged than her four brothers and sisters. During gestation the mother suffered from sunstroke. At the age of two and one-half years she was ill five weeks, at three and one-half years one week, and at four and one-half years two weeks, with gastrointestinal trouble accompanied by fever. In the last mentioned illness he observed no special sign of intracranial disease, but recalls that she had severe headache. The next time she came under observation was on an abnormally warm day, when she was six years old. She had been running and playing violently and appeared to be overcome by heat. The presence of severe headache, cardiac depression, and other symptoms led him to treat the case as one of mild sunstroke. While the symptoms of depression yielded promptly, the headache persisted, and after two days there was paroxysmal pain, somewhat intensified in the suboccipital region, together with retraction of the head. The temperature ranged between normal and 100° F. After the acute symptoms vanished, the mercurial and iodide treatment was instituted for possible syphilitic disease.

Seven weeks later there was paroxysmal headache, with pain somewhat localized in the suboccipital region. During the paroxysms there was retraction of the head with brief tetanic rigidity of the whole body. These paroxysms of headache lasted several hours, but the intense pains were momentary, or at least of short duration. There was slight photophobia. The temperature was usually normal, pulse about normal in rhythm, tongue coated, and bowels constipated. The active symptoms subsided in about ten days.

The eyes were examined under a mydriatic; a portion of each disk at the border was less clearly defined than normal; slightly choked. There was no disturbance of the functions of the cranial nerves or spinal cord.

These were all the positive symptoms observed in the case up to December, 1897. On these findings, and by exclusion, a diagnosis of intracranial tumor of undeterminable character and location was made. The possibility of a gummatous tumor led to the mixed treatment, and during the next four or five weeks, or until January, 1898. She then passed from notice until September 21, 1898, the day before her death.

FIG. 1.—Wall of ependymal cyst of cerebellum. Leitz objective No. 3; ocular No. 3.

There was stupor two or three days preceding death, and frequent tetanic convulsions. The mother stated that from January, 1898, the child had attacks every two or four weeks, with the symptoms gradually increasing in severity. The only new symptoms observed by her were partial amblyopia and progressive muscular weakness, present during the last few weeks.

The autopsy was confined to the cranium. The membranes and entire surface of the brain seemed perfectly normal, and the ventricles contained the normal amount of fluid. In short, nothing pathologic was found excepting a tumor in the middle lobe of the cerebellum.

The pathological examination was made by Maximilian Herzog. Regarding the origin of the tumor he says that leaving out the

glioma, the histogenesis of which is by no means settled, there remain in the central nervous system at least two forms of tumors, the origin of which from ectodermal embryonic inclusions appears to be beyond doubt—the dermoid and the cholesteatoma. That the latter are derivatives of the ectoderm is strongly suggested by the fact that in some cases hairs are included in the epithelial pearls of the cholesteatoms.

It may appear strange to speak first of proliferative processes of the ependymal epithelium of the central canal and the ventricles,

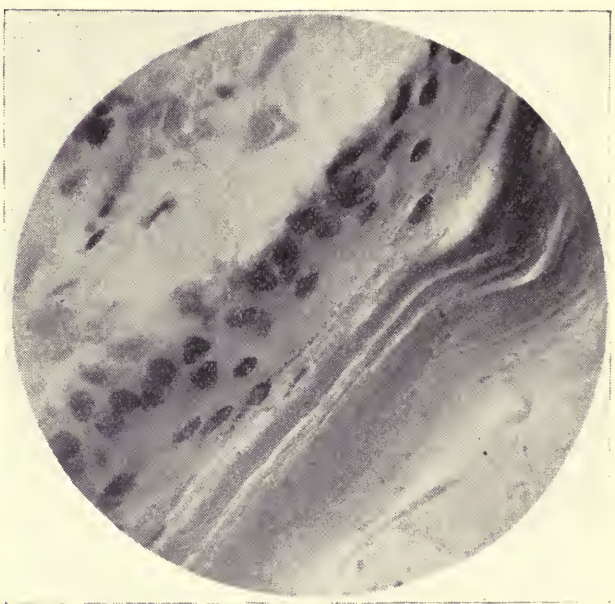


FIG. 2.—The cyst wall with a Leitz pantachromatic oil immersion and No. 3 ocular. Bipolar spindle cells with granules in protoplasm.

and then couple with these considerations the origin of dermoids and cholesteatoms. It should, however, not be forgotten that there are concerned in all three cases proliferative processes of structures primarily derived from tissues of absolutely the same histogenetic origin. Only after the epithelial cells of the ectoderm have been well differentiated are formed the medullary plate and later the medullary groove. The latter is first lined by epithelial cells, as observed in the embryos of the chick, the sheep, and in one young human embryo, which have exactly the same character as the other epithelial cells of the ectoderm, and which later give rise to the

epidermis, its hirsute appendages, and its glandular apparatus. The epithelial cyst, to be presently described, presents some features which might induce one, on superficial examination, to classify it as a dermoid.

The cyst under discussion occupies the site of the vermis inferior of the cerebellum, the posterior end projecting into and partly obliterating the incisure posterior. The commissura brevis, the pyramid, and the uvula of the inferior vermiform process have disappeared. All of that structure posterior to a line drawn through

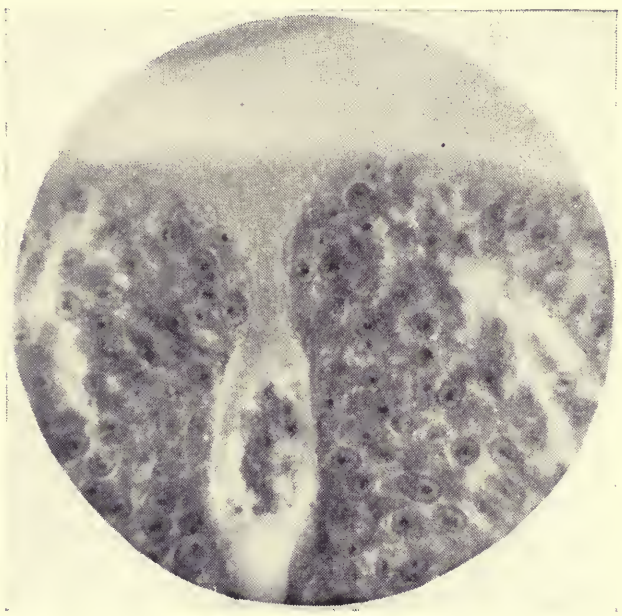


FIG. 3.—Chick embryo, hatched sixty hours. Leitz pantachromatic oil immersion and No. 3 ocular. Shows descent of the ectodermal cells into the neural groove.

the middle of the amygdalæ has been replaced by the tumor. The latter has apparently displaced the posteromedian parts of the hemispheres outward, so that the vallecula, instead of being a deep and comparatively narrow depression, has become wide and shallow. The long axis of the cyst is identical with the long axis of the furrow between the two hemispheres, and measures a little over four centimeters. Transversely the diameter of the cyst is about three centimeters, and vertically, from roof to floor, between two and three centimeters. At the anterior pole of the cyst its upper and lower walls are in complete juxtaposition, and they project as a

solid bud, or, if this term be permissible, as a solid diverticulum into the nodule, the only part of the inferior vermiform process left. The nodule is practically intact, and consequently the cyst has no connection with the fourth ventricle. In growing, the cystic tumor has found room for its enlargement by pushing aside and compressing normal tissues. The posterior part of the inferior vermis has almost disappeared, while the superior vermis is almost intact, and the gray matter of the hemispheres, the central stem of white matter, the corpus dentatum, and the nucleus tecti are macroscopically normal.

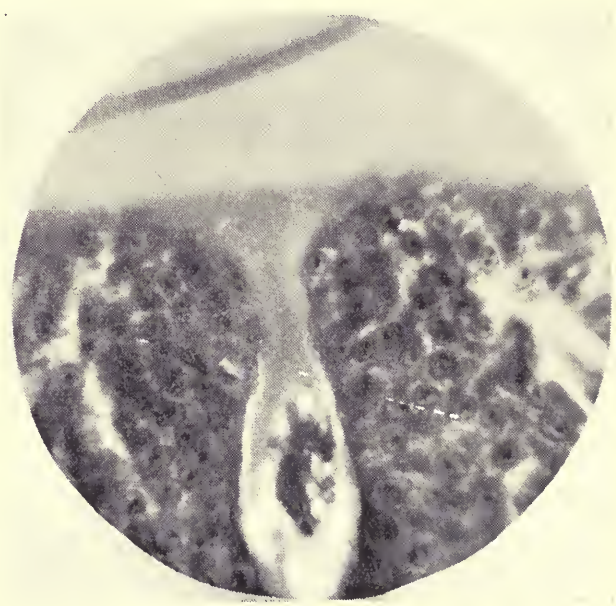


FIG. 4.—The same as No. 3, showing karyokinetic figure in cells lining neural groove.

The cyst wall consists of a whitish, somewhat shiny tissue, which is composed of thin, scaly lamellæ, which can be separated into still thinner flakes and also teased into fine, long fibers. When first examined, the cyst had ruptured and discharged abundant scaly masses.

Microscopical examination showed a cyst wall formed of several layers of cuboidal epithelium. External to this is a tissue composed of cells, more or less spindle-shaped, the nuclei of which do not take the nuclear stain well. In some places nuclei are almost entirely wanting, and instead of distinct cells, only a granular débris is

found. Here are also found some cells in appearance like polymorphonuclear leucocytes. Next to the tissue described is found a zone with cells of the character of those in the granular layer of the cerebellum, and among them a few large non-nucleated masses like degenerated Purkinje cells. The whole of the tissue so far described, excepting, of course, the epithelial cells, creates the impression of being the degenerated remnant of the former gray matter of the vermis inferior. This gray matter had in consequence of the pressure become atrophic and degenerated. Fibrous, wavy, connective

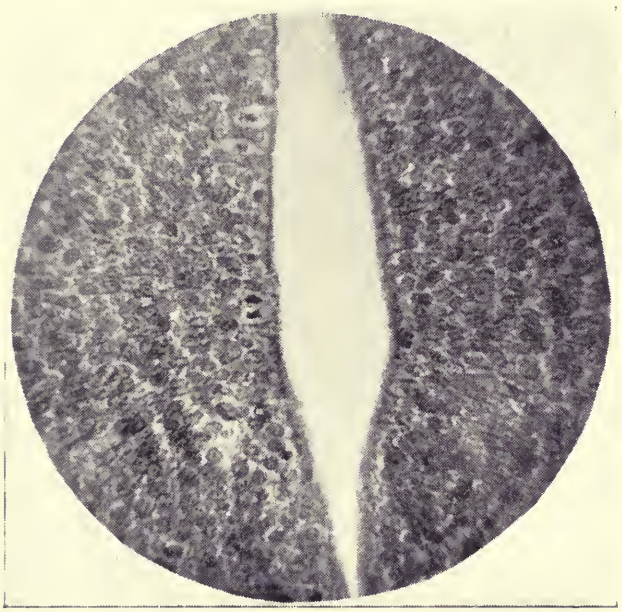


FIG. 5.—Sheep embryo 10 millimeters long, showing central canal. Leitz 3-millimeter pantachromatic and No. 3 ocular. Karyokinetic figures are seen in the cells lining the central neural canal.

tissue, poor in nuclei in some places, richer in other places, and containing blood-vessels, separates the cyst from the gray substance of the hemisphere, which appears normal.

The epithelium forming the cyst wall proper consists of several layers of stratified cuboidal cells, regular in shape in outer layers. Toward the interior of the cyst they become changed. In some places there can be seen a light ring around the cell outlines, or rather a light space between neighboring cells. Distinct intercellular bridges cannot be made out. The changing cells do not, however, assume the type of cornifying epithelium of a typical

dermoid cyst. The epithelial cells of the cyst are changed into slender, bipolar, fusiform cells, with two long processes. While the cell as a whole is changed in type and character, its nucleus, previously round, becomes oval, or more or less rod-like; there appear in the cell protoplasm granules, highly refractive, taking the nuclear stain. The more elongated the cell, the finer are the granules just described and the less perfectly they stain. Finally, we find long, slender, stiff fibers which contain no distinct granules, and which retain a certain degree of affinity for the nuclear stain. Specific

FIG. 6.—Cord with neural canal of sheep embryo, 17 millimeters long. Leitz objective No. 3 and No. 3 ocular. Radial arrangement of neuroglia cells is shown.

stains for neuroglia were tried, but were not satisfactory, due probably to post-mortem changes. The fibers derived from the epithelial cells behave similarly to cornified substance.

The cyst is not a dermoid, but must be considered as a diverticulum of the fourth ventricle, which had become cut off from its original place.

Concerning the embryology of the ependymal epithelium and the neuroglia, reference must be made again to what has been said at the beginning of this report. At the time when the medullary plate and the neural groove are formed, those cells which later form

the ependymal epithelium and the neuroglia, and those ectodermal cells which later form the epidermis, are alike. The ependymal epithelium also shows and preserves another feature, which reminds one of the regeneration of the epidermal epithelium. The formation of the neuroglia takes place, at least early in embryonic life, only from the layer of ependymal epithelia lining the neural canal.[1]

The newly formed cells, which later on become the neuroglia cells, are pushed in a radial manner from the center towards the periphery. The karyokinetic figures are all found directly around the neural canal. The formation and regeneration of the neuroglia occur therefore at this place. These observations explain the fact

FIG. 7.—Section of cord in thoracic region of a human embryo, 16–17 millimeters long; showing radial arrangement of neuroglia cells. Leitz objective No. 3 and ocular No. 1.

brought out by Weigert, that in the ependyma of the ventricles and around the central canal of the cord densely packed neuroglia fibers are found in great abundance. Weigert further states that numerous neuroglia fibers are found on the surface of the central nervous system. These findings may be easily explained from the study of the early embryonic formation of the neuroglia, which also explains why the glia cells in the embryo are arranged in a radial manner. The newly formed cells in the central canal push the older ones outward toward the periphery.

[1] In these embryological considerations the word neural canal is, of course, used in the sense of the whole neural canal, and it includes what later on become the ventricles, ependyma, as well as the central canal of the cord.

FIG. 8.—Section of cord in lower thoracic region of human embryo, showing radial arrangement of neuroglia cells. Leitz objective No. 3 and ocular No. 3.

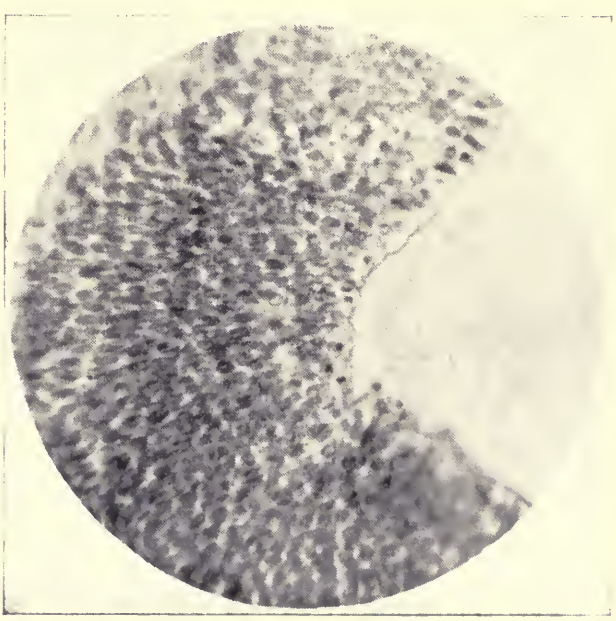


FIG. 9.—The same as Fig. 8, and the same amplification, showing karyokinetic figures in cell layer lining the central canal.

The embryological observations mentioned, as well as observations made in the examination of gliomata, impressed Herzog with the idea that the neuroglia cells, like their near histogenetic relatives, the epidermic cells, in the course of time go through a process of cornification; that from the young simple glia cell there is finally formed the differentiated glia fiber of Weigert. Herzog's impression that the glia cell finally becomes the glia fiber by a process of cornification was formed by considering on the one hand the early embryology of the ependymal epithelium and the neuroglia cells,

FIG. 10.—Section of cord, abdominal region of a human embryo, 12–13 millimeters long, showing radial arrangement of neuroglia cells. Leitz objective No. 3 and ocular No. 3.

and on the other hand the fact of the later existence of the distinct glia fiber. It is evident that the glia fiber must in some way or other be derived from the glia cell. He does not wish to be understood as believing that the glia fiber of Weigert in its intrinsic nature is absolutely identical with a cornified epidermal epithelial cell; but he does believe that two tissues are identical in their early histogenetic origin, but differentiate, later going through a final senile process much alike in both instances.

Concerning the cyst under discussion, the claim that it originated in a diverticulum from the fourth ventricle, early in embryonic life, finds strong support in comparative embryology.

Virchow has described a cerebellar cyst, of which he says: "It is nothing but a diverticulum (ausstuelpung) of the fourth ventricle, which has been transformed into a sacculated nodule." All indications therefore are in favor of the claim that this case was originally a diverticulum of the fourth ventricle. The epithelium lining the cyst was consequently derived from the ependymal epithelium. The latter, as well as the neuroglia derived from it, normally do not show such cornification-like processes as were found to exist in the cyst epithelium. On the contrary, in the cyst wall is a tissue change, a metaplasia, which approaches the type of cells neither ontogenetically nor phylogenetically as highly differentiated as the ependyma and the neuroglia. Such an occurrence might properly and significantly be called an atavistic metaplasia, and it is of interest in showing the way in which ependyma and glia may have become specialized to their present type of senile changes in the course of their phylogenetic differentiation.

It has been previously noted that the ependymal epithelium has a tendency under other pathologic conditions to behave similar to the epidermic epithelium, namely, when we have to do with cylindrical cell carcinomata arising from the epithelium of the ventricles. In such tumors there have been found epithelial pearls, cornified epithelium, identical with the same structures of skin cancers.

In conclusion, he says if a hypothetical remark may be permitted the pathologist, it would be that possibly the sunstroke of the mother while pregnant may stand in some causal relation to the diverticulum in the embryo, and that the neoplastic, proliferative changes leading to the formation of the finally fatal cyst were started in the embryonic inclusion by the sunstroke from which the child suffered in 1897.

Exophthalmic Goitre in Iowa.—

Under this title J. Fred Clarke in the *Philadelphia Medical Journal* of February 18, 1899, reports a collective investigation of the prevalence of this disease in Iowa. Forty-nine cases of the disorder were tabulated, of which forty-seven had never been reported. While conducting the correspondence in reference to this report, sixteen others were learned of that have occurred during the last ten years, the reports of which were too indefinite to tabulate. He believes that sixty-five cases represent all the cases of this disease that have occurred in Iowa during the last decade. He has tabulated cases under the headings pulse, eyes, thyroid, cause, treatment, result, and remarks. His summarized conclusions are as follows:

1. In geographic distribution the cases have been from all parts of the State in proportion to the density of the population.

2. As to sex, thirty-six were females and one a male. The remaining twelve did not have the sex reported, but judging from the context of the reports all were females.

3. The ages range from 15 to 45 years, the greatest number in any one decade being in that from 20 to 30 years.

4. There was exophthalmus in all but one case. In one case only but one eye protruded. In two cases the right eye was more prominent, and in two the left eye protruded the most.

5. The pulse ranged from 96 to 180 beats in a minute. In but one case was there an organic heart lesion reported.

6. The thyroid gland was enlarged in all cases. In nine cases the right lobe was larger than the left, and in but one case was the left lobe larger.

7. As to the etiology, in twenty-two cases the cause was reported "unknown;" heredity was noted in five cases; anxiety and grief in two cases; and fright in three cases. Overstudy, exhaustion from disease, masturbation, and ovarian and uterine disease were reported as less frequent causes.

8. The treatment varied widely. Thyroid extract, rest, strophanthus, digitalis, ergot, belladonna, strychnine, iodine locally and by injections, arsenic, iron, electricity, and nuclein were all used, with varying results. Case 25 is reported as "cured," and Case 42 as "improved," without drugs.

9. As to the result, of the forty-nine cases, eighteen recovered and sixteen more improved. There were five deaths from the disease and three from intercurrent affections.

The author's personal experiences with regard to treatment lead him to believe that the Weir Mitchell "rest cure," without drugs, is successful.

Phrenic Dyspnea Diagnosticated by the X-Rays.—

Albert Abrams, in the *Philadelphia Medical Journal* of February 29, 1899, describes a case of a woman, 27 years of age, who for a period of twelve years had been subject to paroxysmal attacks of short breath on the slightest exertion. The affection had been variously diagnosticated as phthisis, chronic pneumonia, and valvular disease of the heart. The objective examination after the conventional methods showed no anomaly of the heart and lungs. The diaphragm occupied a high position in the chest, and the phenomena of Litten were absent. There was an exaggerated costal type of respiration. During inspiration the epigastric and hypochondriac

regions were drawn slightly in, whereas during expiration they were pushed outward—a reversal of the normal thoracic movements. The reaction of the phrenic nerves was found to be normal. After powerful galvano-faradization of the phrenics, the patient was able to conduct temporary forced inspirations without appreciable embarrassment, which before the application of the electricity was impossible. There were no stigmata of hysteria.

An *x*-ray examination of the chest confirmed the results of the physical examination, showing the integrity of the lungs and normal dimensions of the heart. The diaphragmatic movements were practically suspended, and this phenomenon was noted even after the patient had been instructed to breathe deeply. Suddenly, during the radioscopic examination, the patient became dyspneic and was in great distress. Coincident with the dyspnea, the diaphragm on both sides, particularly the left side, was observed to contract suddenly and to descend to a distance of several inches below its normal position, even after forced inspiration. The diaphragmatic contractions were so evanescent that it was found impossible to measure accurately the extent of the diaphragmatic excursions. These phenomena occurred frequently during the course of the examination and were unaccompanied by the usual inspiratory sounds of singultus. During the time of the spasm of the diaphragm the patient became dyspneic and cyanotic, and the epigastrium continued prominent. The diagnosis was phrenic dyspnea dependent on diaphragmatic inactivity, alternating with spasm of the same muscle; a neurosis of the phrenic nerves.

A Case of Anesthetic Leprosy.—

In the *Chicago Medical Recorder* for February, 1899, an account is given of a case of anesthetic leprosy, which was brought before the Chicago Medical Society by Arthur R. Edwards. The patient had served as surgeon in the British army for twenty-three years, part of which time was spent in India. After leaving the army he traveled in Hawaii and Japan, and eighteen months ago engaged in journalistic work in Cuba. Here he was seized by the Spanish, and was thrust into a hut, in which he sat in mud over his knees for seventy-two hours. Upon being released he noted a slight swelling of the lower extremities. This was followed by plaques and painful areas from the middle of the thigh downward. Later, red blotches appeared, and some thickening of the skin on lower extremities. Considerable hair fell from the head, and all from the pubes and axillæ; what was left on the head turned suddenly gray. Accompanying this

was high temperature, extreme nervousness and irritability, vertigo, and diminished acuity of the special senses, especially that of taste. The patient suffers from a feeling of tightness in the upper part of the abdomen, reduced muscular power, incoordination, heart palpitation, complete loss of appetite, and disagreeable itching of the skin. There are areas of anesthesia over the entire body, but most marked in the lower extremities; in these there is also much weakness. All sensation is reduced, reflexes increased, ankle clonus, distinct enlargement of the ulnar nerve, and its course is somewhat irregular. The lungs are intact, but there is marked interstitial nephritis.

The skin is thickened; there are areas devoid of pigment, and others showing overpigmentation. There is an eruption noticeable upon the thigh, external genital organs, and back. A prominent feature of the case is a very tender ulnar nerve, in which, if any pressure be applied, unbearable pain ensues. Several examinations were made, but no lepra bacilli were found. The previous history of the man presents nothing unusual.

Demonstration of a Cerebellar Tumor by X-Ray.—

Archibald Church, in the *American Journal of the Medical Sciences* for February, 1899, reports a case in which cerebellar tumor was diagnosticated clinically in which a distinct shadow was obtained by the *x*-ray. In making the examination the supposition was expressed that the shadow could not be produced by a growth of a character homogeneous with the surrounding brain tissue, and that in all probability it must be one of a highly vascular character, as it was presumed the blood in the tissues of the tumor gave the shadow. This supposition was confirmed at the autopsy, as the tumor was found to be highly vascular, the seat of a number of old hemorrhages, and also to contain a large clot of recent origin.

In making this skiagraph, Mr. Fuchs, who performed the work for Dr. Church, states that it is important to make an exposure of proper duration in order to secure these results; that underexposure or overexposure produces entirely different pictures. The ordinary focus tube of proper vacuum was employed at a distance of eighteen inches from the vacuum plate on which the head rested. The exposure was three and a half minutes.

Formaldehyde Disinfection.—

W. H. Park, in a paper read before the Medical Society of the State of New York (*Boston Medical and Surgical Journal*, Feb. 16, 1899), stated that this gas is exceedingly irritating to the respira-

tory passages, and that it is, chemically speaking, an unstable substance. For purposes of disinfection it is commonly generated from a 40-per-cent solution of formaldehyde. It is a deodorizer as well as a disinfectant, and is comparatively non-toxic to the higher animals. For surface disinfection, three ounces for each 1000 cubic feet of space to be disinfected is sufficient. It has but feeble penetration, and where it is desired to act through only one layer of moderately thick fabric, at least three times this quantity should be used. Bedding, upholstered furniture, and heavy fabrics generally should be disinfected by steam, or by formaldehyde in special chambers provided with vacuum apparatus, to secure the requisite degree of penetration. The time should be at least eight hours, and the quantity of gas at least ten times that used for surface disinfection. Books may be readily disinfected by spreading them out on shelves and exposing them to the formaldehyde gas, and cars and ambulances may be effectively treated in large chambers. For the ordinary disinfection of dwellings, about twelve ounces of formalin should be used for each 1000 cubic feet, the temperature of the air in the room should not be below 50° F., and the time of exposure should be at least four hours. It costs from fifteen to thirty cents per thousand cubic feet. The cost of sulphur fumigation is about ten cents per thousand cubic feet.

The Diagnosis of Pericardial Effusion.—

H. A. Hare, in the *Therapeutic Gazette* of February 15, 1899, speaks of the difficulty of an exact diagnosis in pericardial effusion. He believes that it occurs more frequently than is generally supposed, it being a condition that often escapes recognition. It is more dangerous than pleural effusion. The difficulty in diagnosis, he thinks, is met by exploration in the fifth intercostal space, with a long, fine, hypodermic needle, carefully sterilized. The needle is attached to a sterile hypodermic syringe, with which some suction can be made if needed. The needle should be pushed in gently, in an anteroposterior direction; at the same time the syringe should be held lightly between the forefinger and the thumb. If the heart engages the tip of the needle, motion is imparted to the syringe, which can be withdrawn far enough to escape the heart wall. He advises this exploratory puncture in every case where symptoms are urgent and pericardial effusion is suspected. The presence of fluid is detected and the position of the heart ascertained. Sometimes abstraction of small amounts of fluid will give relief, but if not, then a large aspirating apparatus can be used.

Germicidal Properties of Blood-serum.—

F. W. White, in the *Boston Medical and Surgical Journal* of February 23, 1899, gives a report of a series of experiments upon the germicidal properties of human blood-serum, together with a review of the literature up to this time. He summarizes his conclusions as follows:

1. Human blood-serum differs greatly in its germicidal action upon various kinds of bacteria.

2. Experiments indicate that normal human blood-serum is not actively germicidal for the staphylococcus pyogenes aureus or the streptococcus pyogenes.

3. Human blood-serum does not lose its germicidal power for typhoid and colon bacilli, even in the late stages of chronic wasting disease.

4. Human blood-serum in fatal disease occasionally loses part of its germicidal power for the colon bacilli shortly before death, but more frequently retains the germicidal power for this bacillus for several hours after death.

5. A weakening of germicidal power of the blood-serum shortly before death undoubtedly favors an agonal invasion of the body by the colon bacillus.

Gastralgia.—

G. C. Clark, writing in the *Maryland Medical Journal* of February 4, 1899, states that this diagnosis is much less frequently made than formerly. More exact methods of investigation show that most of these cases are due to anomalies of secretion or structural changes in the walls of the stomach. Nevertheless, he believes with Ewald that the term "gastralgia" is applicable to a limited number of cases.

The pain of true gastralgia is boring or cutting in character, not usually influenced by the taking of food, or if so, rather benefited than the reverse. Pressure on the epigastrium usually gives some relief to the pain, and digestion is not affected in the intervals of pain. This latter he regards as one of the best diagnostic points in distinguishing gastralgia from the pains due to organic disease. The pain in gastralgia may be extreme in its severity; the attacks may be regularly intermittent, suggesting a malarial origin. He thinks that the best remedy for gastralgia is minute doses of Fowler's solution. This remedy is of little or no value in gastric inadequacy, or those conditions complicated by disturbances in secretion or catarrhal inflammation.

Diagnosis of Movable Kidney.—

Gustav Fütterer, in the *American Gynæcological and Obstetrical Journal* for February, 1899, writes: "We have to find a more or less movable tumor somewhere in the abdomen, which has the size, shape, and consistency of a kidney. We should try to feel the hilus, and, if possible, the pulsation of the renal artery, which, however, can but rarely be felt. This examination is best made by relaxing the abdominal walls by flexing the thighs and raising the upper portion of the body, standing on the right side of the patient if we examine the right kidney. We put the left hand in the right lumbar region, pressing upward, while the right hand carefully palpates the abdomen and only gradually goes down deeper. If in this way we find a tumor which seems to be the kidney, we ought to put our patient into the knee-elbow position and try to percuss both kidneys in order to ascertain the absence of one of them."

The Reaction of Potassium Iodide in Pulmonary Tuberculosis.—

E. F. Wells, in the *Journal of the American Medical Association* of February 4, 1899, says that the iodide of potassium has a marked effect on the respiratory sounds in persons with demonstrated or suspected pulmonary tuberculosis. Where tuberculosis is known to exist, but there is inability to locate the lesion, the locality and extent of the infected area is made evident by the development of râles following the administration of the salt. These sounds are intensified in the consolidated area because of accumulated fluid in the bronchi. In his experience a reaction has been obtained in about two-thirds of the cases of this class. The reaction varies with the individual; in some cases the râles are intensified, and in some they appear in localities where they were before absent. He appends a number of case histories to illustrate the value of the method in suspected cases of tuberculosis.

SURGERY.

Resection of Rib in the Treatment of Pericarditis.—

Korte discusses this subject in the *Deutsche Medicinische Wochenschrift*, No. 2, 1899. He finds that operative interference is only justified in cases of diffusion in which the life of the patient is threatened. This of course is generally the case where the fluid becomes purulent. He divides operations for the relief of the effusion into the pericardium into three kinds, namely, puncture,

incision through the intercostal space, and resection of a rib. He thinks that puncture is a dangerous procedure, as there is great risk of wounding the coronary artery when the position of the heart cannot be accurately determined; if not bound down by adhesions, it is usually pushed forward against the chest wall. In this situation there is great danger of wounding the coronary artery.

The author calls attention to the practical impossibility of emptying infusions of the pericardium, and says this is also true regarding incisions. The most effective means of opening the sac is furnished by a complete resection of the cartilage of the fifth rib. While the dissection is greater, the dangers are much less; it admits of a thorough emptying of the pericardium and its irrigation and drainage. He reports a number of cases in which this method was employed, and while most of them were fatal, there was one complete recovery. Death in the fatal cases was due to the extension or complications attending the morbid process, and in no case to the operation.

A Report of Eight Cases of Intravenous Infusions in Shock and Hemorrhage.—

D. F. Jones reports in the *Boston Medical and Surgical Journal* of February 1, 1899, the results obtained in a number of extreme cases treated in the Massachusetts General Hospital. The solutions employed were those recommended by Ringer, composed of:

Calcium chloride	1½ grains.
Potassium chloride	1 grain.
Sodium chloride	90 grains.
Water	1 quart.

The author thinks that the technique of intravenous infusions is so simple that no one need feel that it is necessary to have a surgeon, or even another physician, to assist. He insists on careful asepsis of the arm, apparatus, and solution; also the exclusion of all air from the tube before introducing the cannula. The solution should be free from solid particles. A probe-pointed cannula should always be used. He says that if these points are carefully observed, there is little danger in the proceeding. No reported deaths are found in recent literature, nor has he been able to learn of any ill effects in seventy cases in which the method has been employed, in the Massachusetts General Hospital.

The temperature of the solution should be about 100° F.; hotter solutions are of greater value as a stimulant; an initial temperature of 108° to 110° F. is well borne. The fluid is cooled from one to two degrees by entering the cannula.

The amount of the solution to be injected at one time varies with the rapidity of the injection and with the quality and tension of the pulse; 1000 cubic centimeters, repeated when necessary, is generally better than a larger amount given at one time.

Of the eight cases, four recovered. Of these latter, one was a fracture of the base of the skull with multiple injuries and considerable hemorrhage, accompanied by severe shock. At the time of the infusion he was covered with a cold sweat, was pulseless and unconscious. He responded to the treatment, became conscious in a short time, and was ultimately discharged recovered.

The second case was an amputation of the thigh. The condition before the operation was very poor. Subcutaneous infusion of sa solution was used, but was not absorbed. The patient was pulseless, and respiration was almost imperceptible. During the intravenous infusion he responded well, the operation was completed, and there was an ultimate recovery.

A third case was one of nephrectomy for tubercular pyonephrosis. The condition before the operation was poor, and afterward there was considerable shock and a good deal of hemorrhage; the pulse became imperceptible, and there was extreme restlessness. Subcutaneous infusion was employed in this case with little effect. Later an intravenous infusion was given, followed by return of the pulse and ultimate recovery.

A fourth case was that of laparotomy for small ovarian cyst. The condition before operation was fair, and after operation good. Ten hours later there was a collapse from internal hemorrhage; the pulse was too feeble and too rapid to count; unconsciousness, cold extremities, and rapid respiration. An intravenous infusion of 1200 cubic centimeters of salt solution, at 108° F. Immediately after this the wound was opened, a bleeding artery tied, and the blood and clots wiped out of the abdomen. At the end of the operation the pulse could easily be felt at the wrist and was of fair volume. The pulse grew steadily worse for three hours, when 1000 cubic centimeters of salt solution was given. The pulse responded well, and after about an hour held its own. There was ultimate recovery.

Although four of the eight died, the cases were all desperate ones. He thinks the infusions of most value in shock accompanied by hemorrhage; the nearer the symptoms approach those of pure shock, other things being equal, the less effective is infusion. When infusion was done more than once, it seemed to be more effective the second time, and its good results seemed to last longer.

Use of Gloves in Surgery.—

W. R. Lockett, in the *Philadelphia Medical Journal* of February 11, 1899, says that gloves were first used in surgical operations by Professor Halsted in 1889. They are now employed by eminent surgeons, many of whom regard them as an absolute necessity. Modern surgical technique practically excludes all sources of infection, excepting the hands of the operator and the skin of the part operated upon. The latter, however, is an uncommon source of infection. Halsted has shown by experiments that it is impossible to secure perfect disinfection of the hands by present methods. He used rubber gloves from the first. Later, Mikulicz employed cotton gloves, in which practice he was followed by Keen, of Philadelphia.

Lockett has made a series of experiments which prove that the fabric glove furnishes little or no hindrance to the passage of bacteria. His experiments and reasoning would lead to the conclusion that rubber gloves are a decided advantage and enable the surgeon to more certainly obtain aseptic results. No other form of glove is of any material use.

Importance of the Relation of the Colon to Abdominal Growths.—

M. L. Harris read a paper before the Chicago Medical Society, February 1, 1899, which was an exceedingly interesting *résumé* of our knowledge upon this subject. The arbitrary division of the abdomen into certain regions divided by lines drawn through fixed anatomical points has been largely abandoned in the diagnosis of abdominal growths. The essential features of the method described by Harris are based upon the fact that the colon bears certain definite relations to the organs of the abdominal cavity, and that it is displaced by enlargements of these organs or tumors, which spring from them in a fairly constant manner.

Where the colon cannot be accurately defined, it is to be distended with air; its position can then be accurately outlined and its relation to an abdominal tumor determined.

This newer division of the abdomen divides it into a region above and behind the transverse colon; the latter and posterior region includes the behind and on outside the ascending and descending colons and a central region, partly encircled by the large bowel.

The Bicycle in Cases of Hernia.—

Championniere reported to the French Academy of Medicine (*Le Progrès Médical*, Feb. 4, 1899) that bicycling was an excellent exercise for patients affected with hernia. It permitted of an improve-

ment in the strength of the muscle walls of the abdomen and a gain in the general health, due to the advantage of exercise in the open air, without the inconvenience attending muscular exercise in the vertical position, which is often difficult for the subjects of hernia. Championniere has all of his patients who are operated upon for a radical cure of hernia resort early to the bicycle.

THERAPEUTICS.

Treatment of Leucorrhea with Argentamin.—

A. G. Cipriani (*Therapist*, Feb. 15, 1899) reports his success with this remedy. He treated twenty-nine cases of leucorrhea of various origin, using, according to the results to be obtained, solutions of various strengths: for ordinary washing out of the vagina solutions of 1:5000 or 1:4000, but for disinfection stronger solutions were used—1:3000, 1:2000, 1:1000. In simple leucorrhea, due to inflammation of the vagina (by irregular mode of living, general debility, insufficient hygiene, etc.), irrigations of argentamin solutions (1:1000), together with a strengthening diet, effected complete cure in nine cases. More especially in mucopurulent and purulent leucorrhea, which so frequently occurs in little girls, argentamin has surpassed all expectations.

In eleven patients (of which several had passed through various treatments without result) argentamin solutions 1:3000 were always successful. In seven of these cases complete cure was effected; three cases showed improvement almost approaching cure; in the remaining case a considerable improvement took place. He observed after treatment with argentamin: (*a*) Decrease of discharge; (*b*) disappearance of pus; (*c*) considerable improvement of health.

Six cases of gonorrheal leucorrhea (four acute and two chronic) were quickly and completely cured. There could be no doubt as to the accuracy of the diagnosis, because they were women who spent their lives in a brothel, and for this reason the author continuously employed argentamin solutions of 1:2000. After ten days' treatment the gonorrhea had disappeared. For safety's sake he kept these patients under observation for a few days longer and never observed a relapse.

In three cases of malignant growths argentamin solutions gave satisfactory results, reducing the secretion considerably, and the patients felt at the same time relieved. This treatment could not

have much effect upon the course of the disease, as they terminated fatally.

In all these cases treated with argentamin the author observed that the remedy penetrated very easily into the tissue. When argentamin was employed in the first stage of the disease it prevented the wandering of the specific elements by rapidly destroying them. Argentamin, thanks to the property of forming a precipitate with albumen which is afterward dissolved, develops a rapid astringent action.

The astringent and antiseptic properties of argentamin would not remove the local symptoms if it did not, at the same time, combat inflammations caused by microorganisms. In fact, argentamin causes a contraction of the dilated interstitial epithelium and thereby the microorganisms are deprived of nourishment.

Argentamin solutions are indicated in the following diseased conditions:

1. In all cases of leucorrhea which are caused by gonorrheal infection.

2. In all cases of vaginal, cervical, and uterine catarrh which are accompanied by a mucopurulent or purulent discharge, a condition which frequently occurs in little girls as well as women.

3. In discharges which are due to malignant growths of the genital apparatus. In these cases, although argentamin does not directly influence the disease itself, it relieves the troubles of the patient.

Massage in Heart Disease.—

In the March issue of MEDICINE we referred to treatment of heart affections by means of the Schott bath. Douglas Graham, in the *Journal of the American Medical Association* of February 25, 1899, in a report on massage, gives a summary of this treatment from the pen of Grainger Stewart. The latter has fully satisfied himself upon the following:

1. That in the great majority of cases of cardiac dilatation the area of cardiac dulness diminishes perceptibly during each administration of massage.

2. That the character of the cardiac sounds and the rhythm and strength of the pulse correspondingly improve.

3. That the patients usually experience a sensation of comfort and feel the better for the treatment.

4. That although the immediate favorable effects pass off in a few hours, yet they frequently do not pass off completely, for he has

often found the line of cardiac dulness within that with which they had started at the previous séances.

5. That repeated applications of massage bring about a permanent diminution of the area of dulness, with improvement of pulse and of the patient's sensations.

6. He has seen a case in which the so-called Schott treatments produced a deleterious effect, rendering the heart more irregular and intermittent. It was afterward treated by massage alone on the following day, with most striking benefit. It turned out that the patient was not sufficiently well to bear the active movements, but was greatly benefited by the passive ones.

7. That on one or two occasions he has seen the manipulations produce unfavorable effects, apparently because the heart was too feeble and the patient was fatigued at the time of application.

Albert Abrams finds that any cutaneous stimulant—mechanic, chemic, or electric—will produce diminution of the size of the heart, with temporary dilatation of the lungs. Vigorous cutaneous friction by means of a wire brush seemed to afford him results in heart disease nearly as good as those obtained by the more elaborate treatment, by means of baths, massage, and exercises. He quotes Moccucci, who sprayed the left half of the abdomen with ether in twelve cases of enlarged spleen, with the result of decrease in volume of the spleen in all the cases. In repeating these experiments Abrams noticed a decided diminution in the size of the spleen in all the people that he tried it on, irrespective of whether the spleen was enlarged or not. Ether sprayed over the heart and over the liver caused decrease in size of both these organs. The results were confirmed not only by percussion, but also by means of the fluoroscope.

Treatment of Ophthalmia in the New-born.—

L. W. Fox, in the *Medical Bulletin* for February, 1899, says the most dreaded complication is the involvement of the cornea, resulting mostly in total blindness. If the cornea assumes a yellowish appearance upon everting the lid, then drastic measures are essential or ulcers will be followed by perforation. If the disease has reached this state, apply a five-grain solution of nitrate of silver to the conjunctiva of the lids; follow this, during the day, with a sublimate solution of 1 to 5000. After placing the head of the child between the knees of the attendant, the body of the child being held by the nurse, evert the upper eyelids, and by gentle manipulation the lower one is turned out. Anoint the edges of the lids with a yellow salve

(hydrarg. ox. flav., gr. ⅛; ung. petrolei, dr. 1). The cul-de-sac about the retrotarsal fold must be thoroughly irrigated. If there is tumefaction of the eyelids, causing the nourishment and circulation of the cornea to be impaired, after the fourth or fifth day, apply a solution of eserine sulphate, of a strength of one-fourth grain to one drachm of rose water.

It will be safe to use eserine earlier in the disease. Since the antiseptic treatment of the disease serious cases of corneal ulceration are rare, and when the public understands the danger of ophthalmia in the new-born, the number of victims from this cause will be further reduced. If the patient is treated while the cornea is intact, it can be preserved in a healthy condition. With instillations of atropine Fox has failed to see one cornea saved after cloudiness has appeared. If the conjunctiva becomes thick and velvety, apply a stronger nitrate of silver solution. It may even be scarified and applications of sulphocarbolate of zinc lotion, or even a twenty-grain to the ounce silver solution, applied.

In many cases of recent date, where there has been ulceration, the author has applied protargol—a solution of 50 per cent—with good results. It is too early to say that this treatment is all that could be desired. Applications of trichloracetic acid in 10- and 20-per-cent solutions often give excellent results in beginning ulcerations. It should be used only on the ulcer of the cornea and not oftener than once each day.

The Sheet Rub.—

H. T. Patrick (*Chicago Medical Recorder*, February, 1899), before the Chicago Medical Society, December 21, 1898, recommended the sheet rub in functional nervous diseases. The success of this mode of treatment depends upon its being done correctly. The rub is given at the bedside. Two sheets are used, and these must be placed in such a manner as to admit of instant handling—either over the end of a chair or the foot of the bed. One sheet is dipped in cold salt water, as a better reaction is obtained from salt water than from clear. The patient is taken from the bed and the cold sheet instantly thrown around him. After briskly and vigorously rubbing him through this sheet, it is dropped to the floor, and he is quickly rubbed through the dry one. He then gets into bed, covers himself well, and puts out his feet to be dried, and slapped to promote circulation. To be properly done, this rub should not occupy over a minute and a quarter; if three minutes are taken, the rub is not properly given. It is exceedingly hard work and completely

exhausts the nurse or physician who gives it correctly. It is usually given before breakfast.

Dr. Patrick gives the first rub himself, and the second is given in his presence, that his instructions may be fully understood. He finds that it quickens circulation, assists the patient to gain in weight, helps in keeping extremities warm, and aids digestion. He thinks that certain elements in the treatment are particularly beneficial in nervous diseases. It produces profound mental impression, exceeding that of any other mode. There is sudden shock, quick reaction, and the feeling of comfort and warmth following impresses the patient with the fact that he is getting well.

The author has never failed to obtain reaction, even in patients who had to be held up while taking the rub.

Antistreptococcic Serum in Epidemic Cerebrospinal Meningitis.—

Chas. P. McNabb, in the *New York Medical Journal* of February 25, 1899, reports two cases of cerebrospinal meningitis treated with this serum. The first case was exceedingly severe in its symptoms and was followed by a slow recovery. He thinks that the results would have been better if the serum injections had been continued some days longer. The second patient died. From the observations made in this case the author thinks that he would materially increase the dose of the serum. While he admits that it is difficult to draw conclusions from two cases, he thinks that the antistreptococcic serum has a decidedly stimulant effect on the nerve centers in meningitic coma. It probably increases phagocytosis, and in this way has some antidotal effect. It probably prevents purulent infection of the exudate, and thus lessens the danger in all cases where the patients survive the first three or four days.

From his observation of these cases the author is quite hopeful that an antidiplococcus-intracellularis-meningitic serum can be produced which will have a decided effect in controlling the terrible toxemia of meningitis, and that the associated effect of antistreptococcic serum after the second day will assist in preventing streptococcic infection of the exudate.

Hiccough Relieved by Depressing the Tongue.—

Louis Kolipinski, in the *Maryland Medical Journal* of February 25, 1899, describes a case of a man 59 years of age, of a vigorous constitution, though somewhat impaired by the prolonged use of alcoholic stimulants and chronic gastritis. For four days he had suffered from severe hiccough, which confined him to the house

and prevented sleep. He complained of fulness in the throat, a condition which he thought the result of the hiccough. The author directed him to sit up, and with a large spoon-handle pressed the tongue down and back, to inspect the fauces. He found the soft palate congested and the uvula thickened and elongated. The hiccough recurred twice, and he could note each time the elevation of the soft palate and uvula in the act. He continued the firm pressure on the tongue with the hope of further noting the action of the palatal muscles, when to his surprise, and to the patient's great astonishment, the hiccough ceased. Under a dose of morphine and chloral he passed a comfortable night.

An hour after the physician's departure the hiccough returned, but the patient with great zeal and confidence placed himself in front of a mirror, passed the spoon-handle to the back of the tongue, and with both hands depressed and steadied it. The hiccough at once ceased. In the morning, on awakening, the hiccough again returned, but stopped spontaneously on his getting up and dressing. Two days later it reappeared, but was promptly arrested by the patient himself in the way described. The time required in each instance to accomplish the desired result was one minute or less.

Colloid Mercury in the Treatment of Syphilis.—

A. Lottermoser is quoted by the *Journal de Médecine de Paris* of February 12, 1899, as recommending a colloid form of mercury (*mercure colloide*) as of great advantage, from a pharmacological standpoint, in the treatment of syphilis. It is claimed that this form of mercury is free from irritation, and with it exact dosage may be attained. Its absorption is certain and rapid. It is spoken of as an allotropic form of mercury and is said to be prepared by O. Werler, who furnishes the substances in the following forms:

1. *Ointment of Colloid Mercury.*—Indicated in the treatment of syphilis by inunction. It has an agreeable odor and contains 10 per cent of mercury; very little friction is required in its application, and much less time than is commonly given to inunction with other ointments. He has never observed cutaneous irritation nor eczema following its use.

2. *A Solution of Colloid Mercury.*—This is an aqueous solution containing 12 per cent of mercury, is of a dark-brown color, and is employed in subcutaneous injections.

3. *Pills of Colloid Mercury.*—These are prepared for internal use, and each contains about a half-grain of the medicament.

4. *Tabules of Colloid Mercury.*—These contain about fifteen grains of the substance and are for the purpose of preparing solutions.

5. *Plasters of Colloid Mercury.*—These are used for local application to enlarged glands and ulcerations.

Antinosin in the Treatment of Chronic Ulcers of the Leg.—

We think that most practitioners will agree with A. H. Ohmann-Dumesnil (*St. Louis Medical and Surgical Journal*, March, 1899) when he says that the difficulty of successfully treating leg ulcers has long been a source of much irritation to both physicians and surgeons. He claims to have found the ideal remedy in antinosin, which is the sodium salt of tetra-iodo-phenol-phthalein. It is a dark-blue, amorphous powder, readily soluble in water and alcohol. Exposed to the air, it is decomposed by carbonic acid into nosophen and carbonate of soda. It is non-toxic, non-irritant, and odorless. He gives a series of fifteen cases treated at the St. Louis City Hospital. The ulcers were dressed daily at first, and then every second day. In each case the adjacent parts were thoroughly washed in a 1:1000 bichloride solution, after which the ulcer was carefully dried. The powdered antinosin was then lightly dusted over the entire affected surface. Over this was placed a gauze dressing, held in place by a roller bandage applied loosely. In cases which presented a hard, infiltrated border at the edge of the ulcer, there was first a thorough curetting, which was occasionally repeated while the case was under treatment.

In this series of cases all varieties of ulcers were included, but none which were not chronic. In all cases improvement was noted from the beginning. In some cases complicated by varicose veins, it was noted that they decreased in size corresponding to the improvement of the ulcer.

Cleansing Solution for the Nasal Passages.—

The importance of a proper cleansing solution for the mucous membranes, which shall be at the same time antiseptic and slightly astringent and without irritating properties, should be universally recognized. It has been appreciated for years by those who devote special attention to treating the throat and nose, but we fear that little or no attention is given to the subject by the general practitioner. Too often a little salt and water or a solution of borax is directed.

G. S. Ryerson, in the *Canadian Practitioner and Review* for

February, 1899, gives a formula which he devised in 1884 as a substitute for Dobell's solution, which his experience had taught him was admirable for throat work, but was too harsh and irritating for the nose:

℞	Sodium bicarbonate	30 grains.
	Sodium borate	30 grains.
	Sodium chloride	30 grains.
	Sodium salicylate	40 grains.
	Oil of bergamot	3 minims.
	Listerine	½ ounce.
	Glycerin	1 ounce.
	Distilled water q. s. ad	8 ounces.

Dangers of Headache Powders.—

The *Bulletin of Pharmacy* for February, 1899, warns pharmacists against the dangers which lurk in the indiscriminate self-administration of headache remedies composed of the anilin synthetics. Several fatal cases are mentioned. In Pittsburg a young lady died from taking a proprietary powder which was afterward found to contain five grains of acetanilid. This substance is not regarded as especially dangerous, excepting where there is marked idiosyncrasy.

It is advised that pharmacists should for the most part prepare their own powders, or have them prepared for them. Not more than three grains of acetanilid should be placed in each powder, as this is sufficient to cause the analgesic effect of the chemical and not sufficient to cause toxic symptoms of any moment, even with those who are peculiarly susceptible to its action. It is well to combine the acetanilid with one grain of caffeine citrate to overcome the depressing action upon the heart.

Orexin in the Vomiting of Pregnancy.—

F. Hermanni, in the *Therapist* of February 15, 1899, reports his results with the use of this remedy in nine cases. It was given in 4½-grain doses in wafers. In not one did the remedy fail of the desired effect, and relief was afforded in most cases after a few doses. The effect is said to be lasting, even after the drug is discontinued. In a number of cases in which the usual remedies had been tried and had failed, or gave but temporary relief, vomiting was promptly stopped by orexin.

Methylene Blue in the Treatment of Rheumatism.—

Le Moine reported to the French Academy of Medicine (*Le Progrès Médical*, Feb. 4, 1899) that he had employed methylene blue in the treatment of rheumatism. It did not diminish pain, but it did

lessen fever, and he thought it possessed a selective action upon the microorganisms of the disease. In the treatment of rheumatism its value is equal to the salicylate of soda. It is necessary to employ a pure product, as the drug is often adulterated with the salts of zinc, which cause cystitis and other unpleasant effects.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

The Persistence of Bacteria in the Milk Ducts of the Cow's Udder.—

In the *Journal of Applied Microscopy* for December, 1898, A. R. Ward writes of his experiments in examining milk and the cow's udder for bacteria. All early investigations consisted of simply counting the bacteria in milk taken at different periods of milking. From the experiments of Schultz and Lehmann it would appear that only the teats or the lower portion of the cistern contained bacteria. Gernhardt, Bolley, and Hall found bacteria in samples taken at all stages of the milking. Grotenfelt and Von Frendenreich agree that milk in the udder is free from bacteria, excepting when the milk glands are diseased; the latter quotes Pasteur as authority for this conclusion. Moore in every examination found that milk in the last quarter of the udder contained bacteria.

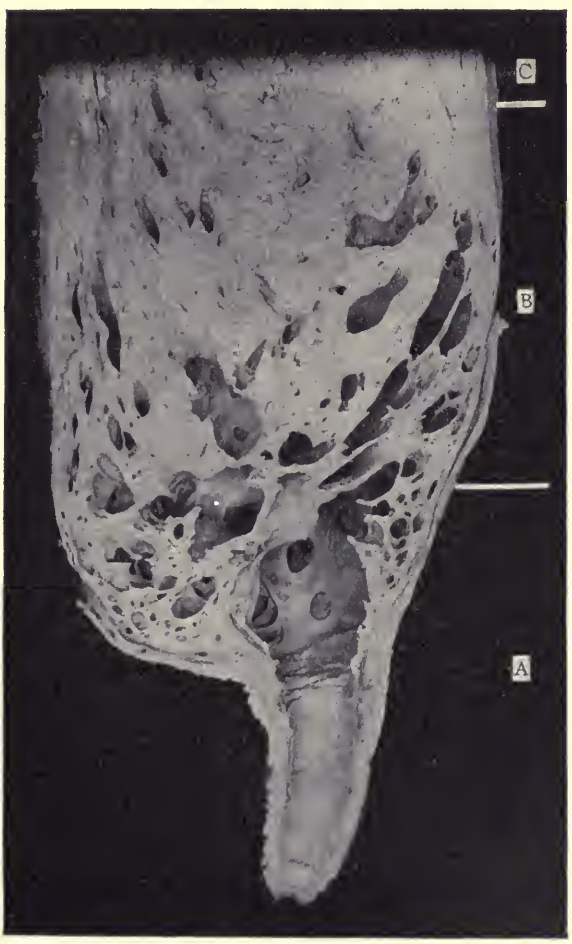
That sterile samples may be obtained direct from the teat has been demonstrated by many investigators, but from the frequent failures of these workers Ward concludes that the last milk contains so few bacteria that it is possible to obtain some samples that are free. It is suggested that the minuteness of the samples may account in many instances for the absence of bacteria.

Ward's methods for determining the presence of bacteria in all parts of the udder were similar to those of Bolley and Hall, except that they inserted the tube through the milk duct. They found one organism common to all animals examined, which had no effect upon the milk. Before collecting samples the udders and flanks of the cow were thoroughly moistened to prevent the dislodgment of dust. The teats were moistened with a solution of mercuric chloride. Samples were drawn directly from the teat into sterile test-tubes provided with cotton plugs. Cultures were made immediately. Five two-hundred-and-fiftieths ($\frac{5}{250}$) of a cubic centimeter of milk was found to give a sufficient number of bacteria for convenient study, upon a plate culture made from fifteen cubic centimeters of media. Agar plate cultures gave best results. The total number of colonies did not appear until after several days in the incubator, at a tem-

perature of 37.5° C. The plates were examined and subcultures made from apparently different species. The various forms of colonies are described and the number of each recorded.

The organisms differed in each of the four teats of a cow thus examined, and only one was found common to all four. The particular species persisted in each teat from day to day. In the milk of one cow with an apparently healthy udder, examined at intervals during eight months, streptococci were always found.

The persistence of a microorganism in the milk cistern was



A photograph of a section through the teat and one-quarter of the udder of a cow. The parts represented by the letters A, B, C indicate the three arbitrary divisions into which the gland was divided for purposes of examination.

tested by injecting the bacillus prodigiosus. This germ is not found in the udder and its color permits of easy recognition. It disappeared from the udder on the sixth day.

The last of Ward's experiments was a bacteriological examination of the glandular tissue of the udder. Samples of the fore milk and of the strippings were taken, in order to compare it with the milk found in the udder after slaughter. Immediately after slaughtering the udder was carefully removed and divided into quarters; each of these was cut into three parts; the first, A, included the teat and milk cistern; B and C included horizontal zones of equal thickness, including the remainder of the gland.

Samples of milk were collected in sterile tubes from the cistern and smaller tubes. Tubes of gelatin and agar were inoculated with bits of glandular tissue from each of the three divisions. Each quarter of the gland was treated similarly, and cultures were made from udders of six cows. The same organisms frequently occurred in all three sections of the udder as well as the fore milk. The relative number of bacteria in the three sections was about equal.

These results in six apparently healthy cows show that the greater portion of the udder is infected and some organisms must remain after each milking.

Ward sums up his investigations as follows:

1. Certain species of bacteria have been found to persist in particular quarters of the udder for considerable periods of time. This controverts the statement that the milk ducts are sterile at the close of the milking, becoming tenanted from outside by any organism which by chance comes in contact with the end of the duct.

2. It is possible for bacteria to remain in the udder and not be ejected with the milk.

3. Bacteria were found in the glandular tissue of the udders of freshly killed milch cows. Identical species of micrococci were obtained from the milk and from the glandular tissue of the udder.

4. Investigations so far published do not show that the last milk drawn is always sterile.

Conservative Treatment of Fibroids of the Uterus.—

W. P. Manton, in the *Medical Age* of February 25, 1899, says that a large proportion of uterine fibroids can be successfully removed by morcellation and myomectomy, either through an abdominal incision or by the vaginal route. He gives an interesting history of a case in which operation was by the vaginal route. The patient was a widow, aged 42 years, suffering from a mild pelvic

peritonitis. Uterus considerably enlarged; ovaries enlarged, tender, and prolapsed. Her condition was such as to incapacitate her for work, and after several weeks of unsuccessful treatment he removed the ovaries and tubes of both sides. An excellent recovery followed, and the patient continued well for some time. Metrorrhagia supervened, and this so annoyed and weakened her that in June, 1892, he did a thorough currettage of the uterus. Improvement followed, but the condition returning again, curettage was repeated in 1893 and 1894. During all this time the patient lost a large amount of blood, but bravely continued at her occupation of nursing, although many times physically unfit for duty. Following the last curettage there was great pain and intermittent contractions of the uterus, accompanied by a thick, stinking mucous discharge. Examination revealed the presence of a sloughing fibroid, a portion of which, about the size of a pullet's egg, was removed. The condition of the patient becoming somewhat serious from the development of septic symptoms, Manton operated through the dilated cervical canal and removed a submucous and intramural fibroid. The sloughing tumor was easily cut away; the removal of the second growth, deeply embedded in the uterine substance, presented some little difficulty, but was finally accomplished by morcellation. The patient made a good recovery and has remained well ever since.

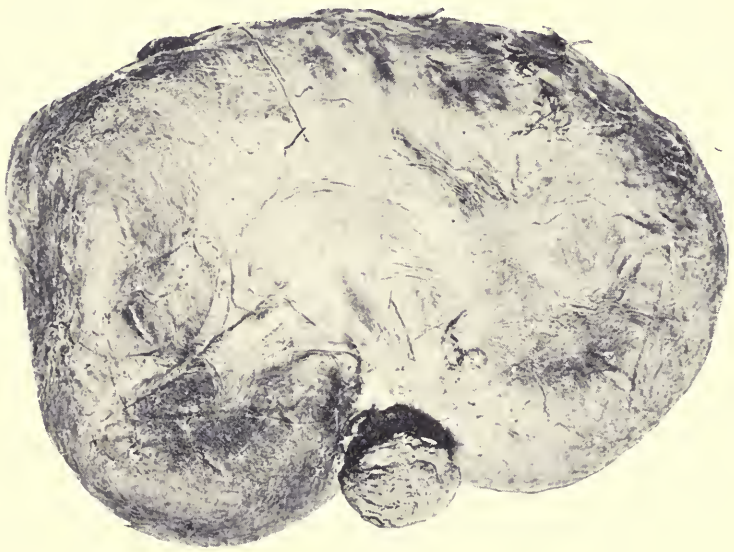


FIG. 1.

Intramural fibroids must as a rule be removed through the abdomen. The subserous varieties differ greatly in their attachment, which accounts for the varying difficulty with which they are removed.

Fig. 1 exhibits an example of the thin-pedicle variety, the stump in this instance measuring only three-fourths of an inch, the tumor weighing about three pounds.

Fig. 2 is an example of the broad-pedicle kind, the attachment being quite as thick as the uterine fundus from which it sprang. The stump in this case measured two inches, the tumor weighing four pounds. The history of the case is as follows: Patient, a domestic, aged 37, single. Menstruation began at 16, is regular, lasts three days, and is moderate in amount, and occasions no pain. The patient complained only of "a lump in my stomach." Examination showed the presence of a solid tumor extending upward to the left to within one inch of the umbilicus. The growth was smooth and not sensitive, except at a single point midway on the left side. The patient was advised to wait until the tumor occasioned pain or inconvenience. She returned in 1898 with the request that the tumor be removed, as it interfered with her work,

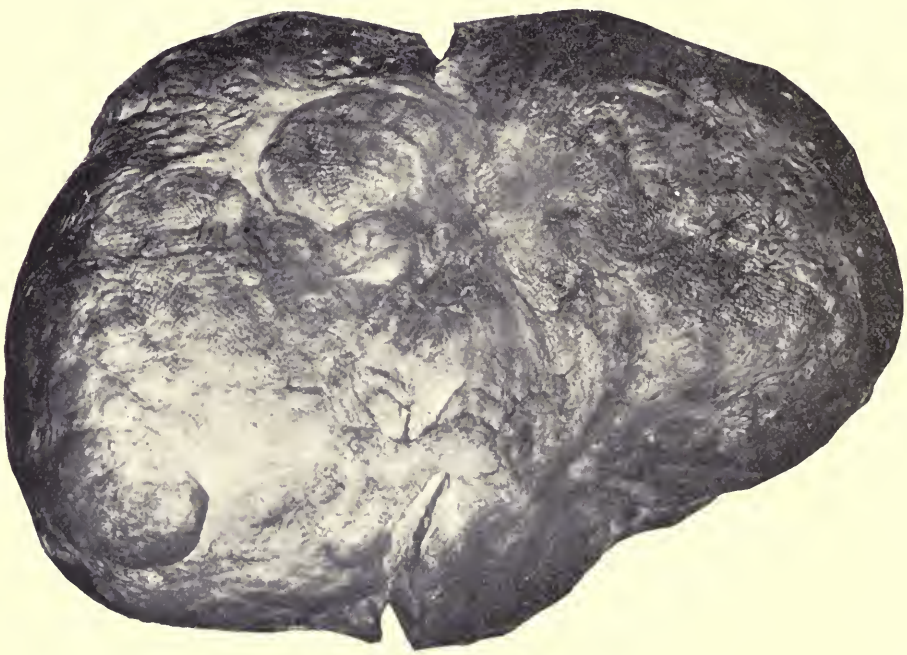


FIG. 2.

and when pressed upon by the wash-board was painful. The growth was removed by the wedge-shaped incision. Recovery followed. The postoperative temperature never exceeded 99.6°, or the pulse 90. Menstruation returned eighteen days after operation, without disturbance. She remains well.

Frequency of Rickets.—

J. L. Morse (*Boston Medical and Surgical Journal*, Feb. 16, 1899) read a paper before the Suffolk District Medical Society on the frequency of rickets in Boston and vicinity. Four hundred consecutive infants under two years of age, medical out-patients of the Infant's Hospital, were examined for evidence of rickets. Eighty per cent showed more or less marked signs. A rosary was present in every case. Only those enlargements were considered as rosaries which could be felt both parallel and vertical to the long axis of the rib. It was the only symptom in 40 per cent. It was accompanied by one other symptom in 20 per cent. The single associated symptom was most often delayed dentition; next, enlargement of the cranial eminences. Delayed dentition occurred in more than 50 per cent. Large fontanel, large eminences, retraction at the diaphragm, and enlargement of the epiphyses of the extremities were each present in about 15 per cent, but were symptoms of later development. Marked rachitic deformities were rare. About 40 per cent of the cases were Russian and Polish Jews. Only 12 per cent came from the Southern races. Breast milk was a part of the diet in 43 per cent, and formed the whole in 18 per cent. The only influence acting on all alike was improper hygienic surroundings; these, therefore, must be considered as the most potent cause of rickets in Boston and vicinity. Race and diet are unimportant causes.

In conclusion the author says that 80 per cent of the children under two years of the poorer classes of Boston and the adjacent cities have rickets. A rosary is not a normal phenomenon, but is an evidence of rickets. It is the earliest and most constant symptom of rickets. In 40 per cent of all cases under two years it is the only symptom. Other symptoms, while they may show themselves at any age, do not, as a rule, develop earlier than the tenth month.

Painful Fibroma of the Vaginal Cervix.—

A brief report in the *Journal de Médecine de Paris* of January 29, 1899, by D'Hotman, gives the case of a young woman who was affected with an exceedingly painful enlargement of the cervix. It was accompanied by quite severe hemorrhages. There was con-

siderable suffering in the lower part of the abdomen, and disturbances of the rectum. There were pains which closely resembled uterine colic. So tender was the cervix that an accurate examination could not be made until after the administration of suppositories of opium. The external organs were normal, but the cervix was very much enlarged and was to a great extent occupied by a round and comparatively firm tumor, which was exceedingly sensitive to touch. The os was dilated and a uterine exploration made, which gave negative results. The cervix was removed by circular amputation. The operation was followed by no untoward effects, and at the end of sixteen days the patient had fully recovered. There was complete cessation of the pain and hemorrhage. The following year she was delivered of a child weighing nine pounds, without the slightest trouble.

FORENSIC MEDICINE.

Judicial Methods—A Criticism Based on the Zellner Case.—

In the *Philadelphia Medical Journal* of February 18, 1899, H. C. Wood has an extended criticism of judicial methods, based upon the present defects in introducing medical testimony, as illustrated in the Zellner case, the latter being a trial for homicide by strychnine poisoning.

The statistics of homicides in the United States are very imperfect. The *Chicago Tribune* attempts to supply this deficiency, and while its tables are probably not accurate, they may be taken as underestimates. According to this authority, for the past ten years the homicides have averaged a little under 10,000 a year. The cause of this enormous annual slaughter is attributed to the failure of our juridical system. The article of Dr. Wood forms an exceedingly interesting study in medical jurisprudence. He thinks that in the Zellner case death from strychnine poisoning was clearly proven. In the evidence for the defense it was stated that quinine, when mixed with strychnine, cannot be recognized in an alkaloidal residue; that strychnine is liable to accumulate in the stomach and system and produce a sudden fatal outburst; that aspidospermine gives the same color reaction with sulphuric acid and potassium bichromate as strychnine; that the portal vein rises out of the vena cava. All of these being incorrect and misleading, an attempt was made to rebut them on the part of the prosecution; the rebutting testimony was excluded by the judge.

The author is confident that if the method of procedure and

rulings that were followed in this case are to be followed in the future, it will be impossible, except under the rarest circumstances, to give that demonstration of death by poisoning which should be the basis of conviction for murder by poisons. It will always be possible for defending lawyers to find some one who, through ignorance, inadvertence, love of money, or other reason, will deny the simplest facts of toxicologic science. As stated by the district attorney in the course of the case, the law does not allow the contradiction of such statements by books. If, therefore, it be not allowable to rebut such allegations as those given in the present case, how is the truth to be made out? It is impossible for any chemist in the primary evidence to foresee and guard against all lines of attack, by incorrect statements to be made by the defense. If the validity of the tests relied upon by the chemist for the recognition of a certain alkaloid is called in question by the defense, which asserts that another alkaloid will respond to the same test, the commonwealth must have the right to show that this is incorrect, or the truth cannot be established.

The present difficulties surrounding medical expert testimony are great, but if the alternately loose and strict rulings given in the Zellner case are to be the pattern for the future, these difficulties have, to the author's thinking, become insuperable, and another long step has been taken to the *reductio ad absurdum* of trial by jury.

A Case of Triple Personality.—

The Pathological Institute of the New York State Hospitals for the Insane (*Boston Medical and Surgical Journal*, Feb. 23, 1899) has recently reported a case of great scientific interest occurring in the department of the institute devoted to psychology and psychopathology. The case is a remarkable one of amnesia, the patient being a clergyman about 26 years old, who fell out of a wagon, and striking upon his head became unconscious. When he recovered from the stupor it was found that he had completely lost his memory and that his personality was lost with it. His mental condition was that of an infant, and in the course of education to which he was subjected he developed a new personality, totally different from the old. He next manifested the phenomena of alternating personality—for instance, falling asleep in his secondary personality and awaking in possession of his primitive personality, and *vice versa*. Neither personality was at all conscious of the other. The patient thus had two consciousnesses, which he possessed at different times,

but between which there was absolutely no communication. The problem was how to unify this double consciousness. This was attempted by preventing him from lapsing into profound slumber, keeping him in a condition between sleeping and waking, and the result proved successful. As a consequence he developed a third personality, which was conscious of the other two personalities, and this finally filled every gap in his memory. Dr. Van Giesen, the director, speaks of the case with satisfaction and expresses the opinion that it shows a decided advance in the domain of psychology.

A Simple Test for Arsenic.—

In 1892 Gosio published in the *Revista d'Igiene* what he described as a biologic test for arsenic, which consists essentially in the development of a peculiar garlic-like odor when the *Penicillium brevicaule* is grown in the vicinity of substances containing arsenic. Recently Abba (*Centralbl. für Bakt.*, Nov. 1, 1898) has made an extended study of Gosio's method, and has found it to be of much greater delicacy than Marsh's test. Pieces of hide, one centimeter square, impregnated with a solution of arsenic, gave a reaction with this test, while pieces five centimeters square were required to give a reaction with Marsh's test. In using the test small holes are bored in pieces of potato, and the substances to be tested are placed in them. They are sterilized in a Petri dish, after which the penicillium is added. If arsenic is present the characteristic odor is developed within twenty-four hours at room temperature. The reaction does not take place in the presence of antiseptics. A positive reaction was obtained from the urine of a man under arsenic treatment.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

IGNAZ PHILIPP SEMMELWEIS, THE DISCOVERER OF THE CAUSE OF CHILDBED FEVER.

A HISTORICAL SKETCH BASED UPON THAT PREPARED BY DR. MED. JOHANNES GROSSE.

Ignaz Philipp Semmelweis was born in Ofen July 17, 1818. When 19 years of age he attended the University of Vienna to study jurisprudence. After attending some anatomical lectures, he decided to enter the medical faculty. His studies were begun at a time when the work of Skôda and Rokitansky was attracting world-wide attention. His industry attracted the attention of both of these teachers, and it was his intention to become an assistant in the internal medicine department, presided over by Skôda. As this was not possible, he became an assistant in the obstetric wards.

The lying-in department of the k. k. allgemeine Krankenhaus was founded in 1784. During the first five years it was under the charge of Simon Zeller. From 1789 to 1822 it was under the supervision of Johann Lucas Boer. In the thirty-nine years from August, 1784, to December, 1822, the mortality from puerperal fever was 1.25 per cent.

In the next ten years, from January 1, 1823, to December, 1832, the mortality increased to 5.30 per cent. That period marked the introduction of anatomical study in the teaching of medicine, in Vienna.

October 15, 1833, the lying-in department was divided, and in the following eight years the mortality from childbed fever in the first section reached 6.56, and in the second 5.58 per cent; in both sections medical students and midwives were taught. In 1839 the

medical students were taught in the first section and the midwives in the second.

Semmelweis gave two practical courses in the first section, but was not made assistant in the lying-in department until 1846. In the five years from 1841 to 1846 the mortality from puerperal fever in the first section increased from 6.56 to 9.92 per cent, while in the second section the mortality decreased from 5.58 to 3.38 per cent, the mortality in the first section being something like three times as great as in the second. Lying-in cases, with slow dilatation, for the most part strong, young primiparæ, almost invariably died. Practically the same unhygienic conditions prevailed in both sections, the nursing being very poor, the ventilation defective, and the diet insufficient. It was not until March, 1847, that Semmelweis entered permanently upon his duties. March 13, 1847, Jakob Kolletschka, a professor of the University, died from a pyemia following an infection of the finger. In the infected extremity was found a lymphangeitis, which was followed by pleuritis, pericarditis, and peritonitis, and a metastatic process in one eye. The similarity between this case and those of the women who died from puerperal fever made a marked impression upon Semmelweis, and laid the ground for his remarkable discovery in the latter part of May, 1847, when he announced that puerperal fever was a pyemia due to the direct infection of the genital tract by the poisons from dead bodies.

In May, 1847, a rule was passed that before any examinations were made the hands of the examiner should be carefully washed with a chloride of calcium solution. Following the application of this method the mortality from puerperal fever fell from nearly 10 per cent to 3.08. In October, 1847, Semmelweis determined that it was not alone the poison from dead bodies that caused puerperal fever, but any decomposing matter that was in any way infected. This led to the further rule that not only the hands of the operators must be disinfected, but all instruments and dressings, and that infected women should be separated from the well. Under these rules the mortality still further decreased, notwithstanding that the number of students increased.

The first publication of this discovery was made by Hebra in an editorial in the *Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien*, in the year 1847, and was entitled "A most important discovery in the etiology of epidemic puerperal fever in hospitals." In this communication it is stated that out of 100 cases before the use of chloride of calcium solution, eighteen died, while in the period beginning with its introduction and ending November 26 of the same year,

forty-seven died out of 1547, a mortality of 2.45 per cent. Part of this mortality was attributed by Semmelweis to a student who had neglected to cleanse his hands in the chloride of lime solution; also from infection from a woman who was frequently examined, who had a medullary sarcoma of the uterus; and further infections from a woman who had a suppurating ulcer of the leg.

The first director of a lying-in hospital to take up the new discovery was Michaelis, of Kiel. The lying-in hospital at that place had been closed from July to November, 1847, owing to a severe epidemic of puerperal fever. Upon reopening the fever again showed itself, and it was about to be closed on December 21, when Michaelis introduced the chloride of lime solution recommended by Semmelweis. From that date until the following 18th of March but a single case of puerperal fever occurred in the Kiel lying-in hospital.

In March, 1848, 276 women were confined in the Vienna clinic without a single death. This was followed in April, 1848, by a second communication in the *Zeitschrift der k. k. Gesellschaft der Aerzte zu Wien*, by Hebra, in which the success of the method was affirmed, and the directors of other clinics were urged to adopt the procedure and report results.

Up to the end of 1848, Semmelweis had published nothing regarding his discovery. February 23, 1849, in the Vienna Medical Society, Haller reported on the mortality in Section 1 of the Vienna Maternity. He compared the mortality of ten years, and found that in the past year it had been enormously reduced, notwithstanding that the number of patients treated had increased. This happy result he attributed to the fact that before every examination it was necessary to use the chlorine water. On March 20, 1849, Semmelweis was removed from his position in the lying-in department. June 6, 1849, he was made a member of the Vienna Medical Society. Soon after this there appeared Dr. Haller's account of the Vienna General Hospital for the year 1848. He spoke of the fact that during that year the mortality in the two sections of the lying-in department had become nearly equal. The section under the care of Professor Klein, which was attended by the students of the University, had always had a markedly greater mortality than the section in which midwives were instructed. Haller says: "The cause of this difference has at last been discovered, credit for which discovery must be given to a meritorious assistant of the lying-in department, Dr. Semmelweis." Haller states that Semmelweis confirmed his theory by experiments upon animals, and he says:

"The importance of this discovery for lying-in institutions and hospitals, especially for the surgical wards, cannot be measured." The first complete publication of the new discovery was made by Skôda before the Vienna Academy of Sciences, under the title, "The new discovery of Dr. Semmelweis, of the cause of the great mortality in the lying-in department of the Vienna Hospital, and a method for preventing the same." In opening his paper Skôda said that in his opinion it was the most important medical discovery that had yet been made. In closing he reaffirmed all that Semmelweis had claimed regarding the importance of the discovery, and mentioned the further fact that from the beginning of the year 1849, until September, the mortality in the department for midwives was 76, while in the students' department it was only 60. The average mortality in the students' department for the past seven years had been four times as great as in the department for midwives.

In May, 1850, Semmelweis read a paper before the Medical Society of Vienna, in which he gave his views as to the origin of puerperal fever. He pointed out its resemblance to ordinary cases of pyemia, and combated the idea of a single epidemic infection in this disease. In a meeting June 18, 1850, the subject was thoroughly discussed. July 15, 1850, the debate was again resumed, and it was decided that the discovery should be celebrated in the forthcoming year-book of the Society. This, however, was not done, probably owing to the fact that Semmelweis did not publish his paper. As he was no longer connected with the Vienna General Hospital, he tried for eight months to be named *privat-docent.* This was finally granted, but his lectures were confined to theoretical midwifery and to practical demonstrations upon the phantom. Five days after being named *privat-docent* he left Vienna for Pesth.

May 20, 1851, Semmelweis was named as the first physician of the lying-in department of the St. Rochushospitals, and in 1855 he was named as Professor Ordinarius of theoretical and practical midwifery in the Imperial Hungarian University of Pesth.

During the six years of Semmelweis' service in St. Rochushospitals there were 933 confinements, of whom only eight died, a mortality of 0.85 per cent, notwithstanding that the general surroundings were exceedingly unfavorable. In the University clinic his results were not so good, and it was with the utmost difficulty that his aseptic methods were carried out. In 1856 he read a paper before the Medical Society of Pesth, a portion of which was published in the *Wiener Medizinische Wochenschrift* and in the *Prager Vierteljahrsschrift.*

In 1862 he had in preparation a work on midwifery, which had advanced so far that more than one-half of the plates had been prepared for its publication. This work was never completed, and was not published. Later he turned his attention to gynecology, and in June, 1863, performed the first ovariotomy in Hungary. In 1865 he began to show signs of increasing mental weakness, and July 20 of that year he was brought to Döbling bei Wien, where he died on the 14th of August at the age of 47 years. The direct cause of death was a pyemia, due to an almost imperceptible infection on the middle finger of the right hand, which had been incurred in an operation upon an infant. He was taken from the Imperial Hospital, which had been the scene of his earlier labors, and buried in the Schmelzer cemetery. In 1891 his body was removed to Pesth, where it now reposes in the Kerepesser cemetery.

THE CONTAGIOUSNESS OF PUERPERAL FEVER AS SET FORTH IN AN ESSAY BY OLIVER WENDELL HOLMES.

The origin of Dr. Holmes' essay in 1843 on puerperal fever was similar to that which called the attention of Semmelweis to the disorder. It was suggested by the case of a physician who made an examination of the body of a patient who had died of puerperal fever, he dying in less than a week, apparently in consequence of a wound received at the examination. It was alleged that several women in confinement were attended by this physician in the meantime, all of whom were attacked by puerperal fever.

His essay was based upon the study of the accessible literature and a tracing out of the private epidemics which followed certain accoucheurs and midwives. One of the most striking of these is taken from the *London Medical Gazette* for January, 1840, in which Mr. Robertson, of Manchester, gave the following report:

"A midwife delivered a woman on the 4th of December, 1830, who died soon after with the symptoms of puerperal fever. In one month from this date the same midwife delivered thirty women, residing in different parts of an extensive suburb, of which number sixteen caught the disease and all died. These were the only cases which had occurred for a considerable time in Manchester. The other midwives connected with the same charitable institution as the woman already mentioned are twenty-five in number, and deliver, on an average, ninety women a week, or about three hundred and eighty a month. None of these women had a case of puerperal fever. Yet all this time this woman was crossing the other midwives in every direction, scores of the patients of the charity being delivered by them in the very same quarters where her cases of fever were happening." In closing his essay he advances the following conclusions:

"1. A physician holding himself in readiness to attend cases of midwifery should never take any active part in the post-mortem examination of cases of puerperal fever.

"2. If a physician is present at such autopsies, he should use thorough ablution, change every article of dress, and allow twenty-four hours or more to elapse before attending to any case of midwifery. It may be well to extend the same caution to cases of simple peritonitis.

"3. Similar precautions should be taken after the autopsy or surgical treatment of cases of erysipelas, if the physician is obliged to unite such offices with his obstetrical duties, which is in the highest degree inexpedient.

"4. On the occurrence of a single case of puerperal fever in his practice the physician is bound to consider the next female he attends in labor, unless some weeks at least have elapsed, as in danger of being infected by him, and it his duty to take every precaution to diminish her risk of disease and death.

"5. If within a short period two cases of puerperal fever happen close to each other, in the practice of the same physician, the disease not existing or prevailing in the neighborhood, he would do wisely to relinquish his obstetrical practice for at least one month, and endeavor to free himself by every available means from every noxious influence he may carry about with him.

"6. The occurrence of three or more closely connected cases in the practice of one individual, no others existing in the neighborhood, and no other sufficient cause being alleged for the coincidence, is *prima facie* evidence that he is the vehicle of contagion.

"7. It is the duty of the physician to take every precaution that the disease shall not be introduced by nurses or other assistants, by making proper inquiries concerning them, and giving timely warning of every suspected source of danger.

"8. Whatever indulgence may be granted to those who have hitherto been the ignorant causes of so much misery, the time has come when the existence of a *private pestilence* in the sphere of a single physician should be looked upon, not as a misfortune, but as a crime; and in the knowledge of such occurrences the duties of the practitioner to his profession should give way to his paramount obligations to society."

A perusal of the literature collected by Holmes shows that for many years there had been an increasing belief that puerperal fever was contagious and that it might be conveyed by the practitioner or monthly nurse. Gordon, of Aberdeen, in a work on puerperal fever in 1795, says: "This disease seized such women only as were visited or delivered by a practitioner, or taken care of by a nurse, who had previously attended patients affected with the disease. I had evident proofs of its infectious nature, and that the infection was as readily communicated as that of the smallpox or measles, and operated more speedily than any other infection with which I am acquainted. I had evident proofs that every person who had been with a patient in the puerperal fever became charged with an atmosphere of infection, which was communicated to every pregnant woman who happened to come within its sphere. This is not an assertion, but a fact, admitting of demonstration, as may be seen by a perusal of the foregoing table" (referring to a table of seventy-seven cases, in many of which the channel of propagation was evident). He adds:

"It is a disagreeable declaration for me to mention that I myself was the means of carrying the infection to a great number of women." He enumerates a number of instances in which disease was conveyed by midwives and others to the neighboring villages, and declares that "these facts fully prove that the cause of the puerperal fever, of which I treat, was a specific contagion, or infection, altogether unconnected with a noxious constitution of the atmosphere."

But his most terrible evidence is given in these words: "*I arrived at that certainty in the matter, that I could foretell what women would be affected with the disease upon hearing by what midwife they were to be delivered, or by what nurse they were to be attended, during their lying-in; and in almost every instance my prediction was verified.*"

Farr, in the fifth annual report of the Registrar-General of England, in 1843, said: "A certain number of deaths are caused every year by the contagion of puerperal fever communicated by the nurses and medical attendants."

Among the writers of the earlier part of the century quoted by Holmes, in support of the contagiousness of puerperal fever, were Gordon, John Clark, Denman, Burns, Young, Hamilton, Haighton, Good, Waller, Blundell, Gooch, Ramsbotham, Douglas, Lee, Ingleby, Locock, Abercrombie, Alison, Travers, Rigby, and Watson.

Holmes' essay aroused a bitter controversy. Professor Hodge delivered a lecture on "The Non-contagious Character of Puerperal Fever" before the students of the University of Pennsylvania, October 11, 1852, which was printed and extensively circulated.

In 1854 Charles D. Meigs, professor of midwifery in the Jefferson Medical College, published a series of letters to the students of his class, taking the ground that childbed fever was not contagious.

In 1855 Dr. Holmes reprinted the original essay which had been read before the Boston Society for Medical Improvement, and which was originally printed in the *New England Quarterly of Medicine and Surgery* for April, 1843. The republication is accompanied by an introductory note in which he pays his respects to Drs. Hodge and Meigs; the latter receives an especially severe castigation, and if we can judge from the quotations given by Holmes it is apparent that Meigs had had several private epidemics of his own, and that to admit the contagiousness of puerperal fever, and the possibility of carrying it by the attending physician, was to him not only inconvenient, but exceedingly repugnant.

That Holmes left nothing to be desired in the way of clearness of statement and vigor of diction is shown by the following:

"Why a grand jury should not bring in a bill against a physician who switches off a score of women one after the other along his pri-

vate track, when he knows that there is a black gulf at the end of it, down which they are to plunge, while the great highway is clear, is more than I can answer. It is not by laying the open draw to Providence that he is to escape the charge of manslaughter.

"To finish with all these lesser matters of question, I am unable to see why a female must necessarily be unattended in her confinement, because she declines the services of a particular practitioner. In all the series of cases mentioned the death-carrying attendant was surrounded by others not tracked by disease and its consequences. Which, I would ask, is worse—to call in another, even a rival practitioner, or to submit an unsuspecting female to a risk which an insurance company would have nothing to do with?

"I do not expect ever to return to this subject. There is a point of mental saturation beyond which argument cannot be forced without breeding impatient, if not harsh, feeling toward those who refuse to be convinced. If I have so far manifested neither, it is well to stop here, and leave the rest to those younger friends who may have more stomach for the dregs of a stale argument."

The essential difference between the work of Holmes and that of Semmelweis is that the former's studies were chiefly literary and polemical, the latter's experimental. Much of the material in the American essay had been published; the remainder was obtained by personal inquiry among professional friends. Semmelweis had a distinct idea of the infection, believing that it was a poisonous substance conveyed to the genital tract by the hands of the examiner. He first thought that it came from dead bodies; later he recognized that any suppurating surface might furnish the same material.

In analyzing the essay of Dr. Holmes, we must bear in mind that the nature of the contagion did not especially occupy his mind in preparing the essay; its chief purpose was to convey the lesson of contagion and its usual if not only means of extension. It is probable that he regarded puerperal fever as a distinct fever, though the highly infectious qualities of erysipelas were recognized. He thought of the contagion as a noxious effluvium surrounding the patient and her attendants. That a body dead of puerperal fever was thought to be less dangerous than a living patient is shown by the injunction that midwifery cases should not be undertaken for twenty-four hours after a post-mortem examination, while after a case of fever none should be attended for a week. The idea of Semmelweis was undoubtedly one of contact infection, in which an appreciable poison was brought to an absorbing surface. This is conclusively shown by the precautions which he instituted. That

Holmes should have missed this important point is only to be explained by the dominating theories of the time, which attributed most infections to atmospheric diffusion. Had he not been imbued with these theories, the facts set forth in one of the letters would have been recognized: A physician describes three epidemics of puerperal fever in his practice. The last occurred in 1835 and included several patients who were ill, two of whom died. In the midst of this epidemic he adopted the practice of changing his clothes and washing his hands in chloride of lime solution after visiting the infected cases. While he had these cases in charge he attended seven women in confinement, none of whom were infected.

The introductory remarks which were added to the original essay in 1855 were an answer to those who denied the contagiousness of puerperal fever, and who thought it improbable that it was carried by the medical attendants or nurses. At this time the work of Semmelweis was known to Holmes, because he is cited among a list of later writers who acknowledge the contagiousness of puerperal fever. The paper quoted by Holmes was a report made to the French Academy of Medicine on the work of Semmelweis.

It is evident that Semmelweis' contribution to this subject had a deeper significance than that of Holmes; it was a demonstration of the contagiousness of puerperal fever and of the efficacy of cleanliness and antiseptics in dealing with it. It is doubtful if in the half-century that has elapsed since the discovery of Semmelweis anything of material value has been added to our knowledge of this subject, except our identification of the morbid agents, and greater precision in the technique of antiseptics.

The question of priority as between Holmes and Semmelweis need not be raised, as Holmes did not make a discovery at all; he merely gathered together views current in the profession and supported them with additional facts. His argument was clear-cut and forcible, and any one who reads the controversy which his essay met cannot for a moment think that its conclusions were in the slightest degree gainsaid. If the title of discoverer of the cause of childbed fever is to rest upon the conception of a material poison conveyed to the parturient woman, which could be removed by cleanliness and antiseptics, then priority must be given to the unknown physician who wrote Dr. Storer in 1842 detailing an epidemic of childbed fever in his practice, during which he attended seven women in confinement and prevented further infection by changing his clothes and washing his hands in chloride of lime solution.

CONTAGION AND INFECTION IN NERVOUS AND MENTAL DISEASES AND DEGENERACY, AND MEASURES OF PREVENTION.

BY RICHARD DEWEY, M.D., WAUWATOSA, WIS.

We do not ordinarily think of nervous and mental maladies as contagious or infectious or capable of propagation by germs, though it is literally true that certain mental and nervous diseases are the result of toxins of bacterial origin and that there are many specific infections capable of causing insanity directly or indirectly. It is, however, not with a view of demonstrating disease germs or advocating antitoxic treatment in its literal sense that this paper is written. If visions of some new form of "serum treatment" are evoked by the title of my paper, and the expectation is aroused that in the near future we may look to see antitoxic farms established, where some potent antidote will be elaborated from the lower animals for the cure of the various neuroses and psychoses, only disappointment can result from such an expectation.

Nevertheless there is another and even more important sense in which mental diseases and nervous disorders are infectious and contagious, and it is concerning these infections and contagions and means whereby they may be prevented or counteracted or limited in their evil working that I wish to speak at this time.

The contagions and infections now in mind are not those disseminated through the direct medium of germs, but through the influence (direct or indirect) of mind upon mind—for mental contagion and infection are as real in their working as any bacterial agent, and not only insanity but purely nervous disorders, as hysteria and chorea, may spread from a single sufferer to an indefinite number of persons—indeed, the fact that these diseases are communicated by mental contagion strengthens the claim that they are in reality mental diseases, or, on the other hand, tends to show that all the phenomena of the complexus of symptoms which at present we label insanity are based upon physical changes which cannot as yet be fully understood, but await the completion of the combined investigations of the physiological and pathological psychologist. The work of mental contagion and infection is accomplished in a variety of ways. It is *immediate* and *direct*, or slower in its working, involving a period of *incubation* and *gradual evolution;* or, again, mental contagion and infection are spread by the processes of *procreation* and *inheritance*.

Some examples of direct mental contagion may be briefly cited. A review of the facts recorded in history shows that there have been in the past appalling epidemics of insanity, religious fanaticism, demonolatry and witchcraft, flagellation, scourging, and tarantism; convulsive disorders and dancing manias have swept repeatedly over the countries of Europe. In the thirteenth century occurred the children's crusade, in which it is estimated 50,000 children in Germany, France, and adjoining countries set out for the Holy Land under the influence of the delusion that the innocence of children would protect them and make them victorious over the infidel. Thousands upon thousands of these children perished on land and water. In 1260 a boy in Perugia prophesied great calamities, and set in motion an epidemic of flagellation which swept over Italy. In the fourteenth century the dancing mania spread throughout Germany. Tarantism, the delusion of being bitten by scorpions or spiders, broke out in Apulia, and for centuries continued to be diffused at intervals over Italy. Any one bitten by a scorpion or spider, or imagining himself to have been bitten, or even seeing the other victims of the delusion, would be seized with the disease, manifesting itself in frenzied dancing and leaping; the sight of red caused it in some instances. In some places the mad people rushed to the sea and threw themselves into the water. In 1731 the convulsionists of St. Medard made their appearance at the cemetery of that name in Paris, and for sixty years this disease continued to affect its victims. In 1841 and 1842 the dancing mania spread throughout Sweden, appearing to have been caused by alcohol and insufficient and bad food from the poor harvests. Under the category of mental contagion in our own day come the panics and frenzies of crowds, in which a veritable insanity is instantly developed, as in the case of the thousands who trampled each other to death at the wedding celebration of the Russian czar.

Many of the phenomena above described differ from what we understand under the term insanity to-day. I cite them as illustrating mental or nervous disease conveyed by contagion. These transitory causes produced a transitory insanity (though in many cases the condition became one of permanent insanity), and it is evident *a fortiori* that the more protracted and equally intense influence of fixed insanity would as readily infect the mind of those brought in contact with it.

It may have been noticed that in my title I include "degeneracy" among the effects of contagion and infection, and this may seem to involve an unwarranted assumption. Degeneracy indeed is not to

be regarded as immediately contagious or infectious, as it is an inborn and inherent condition, but being such it is infectious in a manner as positive and unerring as where a specific microbe is conveyed to the body of an exposed person and there sets up its diseased process. In a fanciful but nevertheless a true sense the human ovum or spermatozoid may be regarded as a microbe of all degenerative diseases. And the act of procreation is an act of conveying diseased infection. It is much more than this truly, but in the greater is included the less, and it cannot be doubted that the propagation of nervous and mental disease by extension from generation to generation is the most serious morbific influence with which we have to contend.

Mental contagion in its *slower working* is illustrated by insanity, hysteria, and St. Vitus' dance, affecting members of the same family or inmates of the same house, and slowly developing like the *folie à deux* of the French writers, which indeed often includes three or four victims in one house or family; and I have myself in one instance seen five members of one family affected at the same time, three of whom came under my care in one day. Doubtless many of these cases come also under the next division of those hereditarily predisposed. Finally, mental contagion or infection is accomplished by the less obvious but equally disastrous results of *inheritance*. The facts of this method of communication of mental and nervous disease are so obvious that I need not dwell upon them. I do not say that in *all* cases where insanity, nervous diseases, epilepsy, suicide, etc., appear in the same family they are necessarily in every instance inherited or communicated; but the facts are clearly established, even with the small means of obtaining them in our public asylums, that more than 50 per cent of the cases show direct inheritance. In considering the workings of mental contagion we must in all cases recognize the fact of a predisposition existing—*i.e.*, most of the individuals affected are *constitutionally predisposed*, and probably would not succumb but for this predisposition, a fact making it all the more important where possible to protect from exposure to contagion.

A significant remark was recently made to me by a colleague in discussion of the methods of care of the insane which are practiced to-day in our country. This colleague animadverted upon the extreme care taken of the insane and degenerate in our communities, fostering and protecting them in institutions and prolonging their lives, and temporarily curing many, who are returned to private life and secure abundant opportunities for propagating their

kind. He expressed the fear that this process of spreading nervous and mental disease and degeneracy and promoting their procreation would eventually lead to multiplying these diseases enormously and disastrously from generation to generation, and regarded it as a mistaken kindness to render comfortable and agreeable the lives of our defectives, and thus promote their vitality and vigor. This view, which one hears more and more frequently expressed, appears to set at naught all the philanthropy of our day, and is important if true. A juster view, however, it seems to me, is that, bad as the conditions of degeneracy are to-day, they are undergoing a favorable modification and are far less mischievous than in former ages; they may, indeed, be regarded as a mild survival of the frightful mental, physical, and moral plagues and epidemics which have raged in former ages. This question of protecting, fostering, and propagating the unfit is also important in its relation to the fact that the numbers of the insane are constantly increasing in our civilized communities, and that insanity is especially a disease of civilization, since it is little known among the uncivilized peoples and races. This unquestionable fact bears various interpretations. Undoubtedly the savage brain, for one reason, is less disordered because there is less of it, and far less complexity in its working. Again, while the number is larger who are to-day recognized as insane, we cannot doubt the same conditions formerly existed, but failed to come to public recognition. There were no institutions built and no censuses taken of the unfortunate. Also what was formerly regarded as witchcraft and demoniacal possession is seen to-day to have been brain disease—the innumerable crazes and epidemics of pseudo-religious nature. The convulsive maniacs, the flagellants, the tarantists or dancing maniacs, the anointers, the poisoners, the alchemists, have ceased to rage by the growth of enlightenment and spread of intelligence, their kind perhaps surviving to-day in what all recognize as madness and degeneracy, which, bad as they are, are mild compared with the scourges of foregoing ages, and reach smaller numbers. To admit that our condition is growing worse would be to ignore the certain tendency of both mind and body to free themselves from disease under improved conditions; and to admit that our benevolence is a mistake would be to set back the hands upon the dial of progress. We must, however, find remedies for what we all admit is an evil in our times crying aloud for correction.

If we inquire what may be done to stem the rising tide of insanity, neurosis, and degeneracy propagated from generation to generation, we hear various replies.

The remedies suggesting themselves to average thought that we hear constantly advocated or suggested are the enacting of laws for the permanent sequestration in asylums of all victims of such disease or defect, or even the providing of euthanasia—some comfortable mode of exit from this troubled world for all incurables; likewise such stern restrictions as shall render it impossible for degenerate individuals to propagate their kind, either by refusing permission to marry or removing by surgical procedure the essential organs of reproduction.

Now most of these suggestions of legal remedies are crude and impracticable. There are certain fundamental principles upon which the framework of society rests that are contravened by attempts at legislating for certain special conditions. Class legislation when applied to persons of various degrees of mental health and sickness is as vicious as any other class legislation, and its application in enlightened communities will only be permitted by public opinion where the clearest and most unmistakable lines can be laid down; and in these nervous and mental defects it is a matter of greatest difficulty to draw universally satisfactory lines. We may expect eventually that guiding lines and principles will be established. Laws have in recent times been enacted and enforced regulating and controlling the contagions of diphtheria, smallpox, yellow fever, etc., but these diseases are capable of universal recognition in their origin, diagnosis, and treatment; while there is as yet too much that is obscure and unsettled in nervous and mental diseases to admit of sweeping generalizations. Mental sanitation is as yet in its infancy, and the diagnosis and treatment of nervous and mental disease and defect must be perfected and definite lines established upon which all are agreed before any measure of legal control can be assumed. Suppose, for instance, a law were enacted creating an agency (a board or bureau) and giving it power to permanently imprison, to electrocute, to castrate, certain insane, imbecile, epileptic, inebriate, or degenerate beings—when we endeavor to think out for ourselves the steps that such a board would proceed by, the means they would use, the details they would find necessary in attaining any result, we arrive at an idea of the futility of such legislation.

It may be possible that certain conditions of congenital idiocy or incurable insanity can be so defined as to be made the subjects of legislation, but it is precisely these cases that are the least likely to be mischievous. It is the degenerate or insane or imbecile persons who are *close to the normal* line, and who are at different times perhaps on both sides of it, who can be controlled by no law and yet produce the most evil by their existence in the community.

These evils, like the evils of prostitution, of venereal disease, of intemperance, are a perpetual scourge to the welfare of society, and yet defy the utmost ingenuity of the lawmaking power to control except in minor degrees. This fact should not deter the well-wisher of his kind from effort, but rather should incite to greater activity, but of a kind calculated to reach more practical results—and in my opinion the mode in which practical results are to be reached is by education and spread of enlightened views, so that both society and individuals can see what is for their common interest. In this matter there is no conflict of interest, for the propagation of insanity, degeneracy, and nervous diseases is as disastrous to each individual concerned as it is to the community at large. A citizen of even moderate intelligence who would resist a compulsory law, if brought to see the workings of inheritance, of contagion and infection in mental diseases, would at least in many cases *voluntarily* avoid the penalties imposed by Nature.

The efforts that physicians and scientific men can make to enlighten the public mind seem to me to be the only resource. The ignorance of the masses upon these subjects is the chief reason why such deplorable conditions of mental sanitation exist. Sanitation as it relates to *physical* disease is now coming to be better and better understood, and the same work that has been done in bringing this about will require to be done before the people understand the things that pertain to their mental welfare and peace.

The fundamental ideas regulating these matters are that public opinion will tolerate no legislation which risks the oppression of innocent persons; neither will any measure which is harsh or brutal be countenanced, even against the most worthless or imbecile; nor will any law be favored which trifles with human life—even the life of the most useless and degraded. Civilized and Christian society holds itself responsible for the protection of *all* its members; it assumes the humane care and support of all its helpless ones; therefore all measures which involve the taking of life or the denial of liberty must be so hedged about that their operation will involve no mistakes and no injustice. For these reasons the legislation proposed so often, which contemplates permanent imprisonment of any one unless convicted of a capital crime, which denies the right to marry and to give in marriage of any even half-qualified person, which proposes that any citizen shall submit to a compulsory surgical operation contrary to his will, must at present fail of enactment, or if enacted, fail of enforcement. Theoretically we will hear ten men agree that an imbecile man or woman or child, or one

whose family is severely affected with insanity, epilepsy, or inebriety, should be denied the right of marriage or should even be subjected to castration; but let one of the ten be touched in his person or his family by such a regulation, and he will set it at defiance. Those who are unintelligent cannot voluntarily agree to such control or restriction, and those who possess enlightenment will proclaim their ability to rightly regulate their own conduct without being made virtuous by "act of Congress." Thus the propagation of disease and defect of mind goes merrily on, and it may be that our race is thereby to become more and more degenerate and incapable.

But in taking so dark a view do we not lose sight of certain saving agencies in the unwritten laws of development and evolution? First there is a power ever making for healing and healthfulness. Our nature is capable, under favoring circumstances, of wondrous regeneration, and that regeneration will triumph over degeneration in spite of great obstacles, we cannot doubt. Imbecility, inebriety, insanity tend to extinguish themselves even without the aid of intelligence and justice, and when we add these factors, ever more powerfully working in the life of men and nations, we have a force which can purify and elevate in the end the whole fabric of society.

Although civilization seems to breed disease of brain and mind, and although at times we are forced to look upon dark pictures of multiplying degeneracy, crime, and decay, and seem to see hideous maladies and defects increasing hopelessly about us, yet if we compare in a large way our state with that of the ages which have gone, if we reflect on what has been overcome, we have reason to believe the never-ending, still-beginning campaign of science and education against error and disease will finally bring about a sane and healthful state of mind in the body politic, and we shall then have in the larger sense *mens sana in corpore sano.*

A LATE FORM OF GONORRHEAL CYSTITIS IN THE FEMALE.

BY GUSTAV KOLISCHER, M.D., CHICAGO.

From bladder tissue, removed by myself, Wertheim proved the existence of genuine gonorrheal cystitis in the female. Clinical observations have also disproved the long held opinion that gonorrheal inflammations of the female urinary passages do not require special treatment because of frequent spontaneous cure. Many cases of gonorrheal cystitis that have either not been treated at all, or improperly, result in the development of a well-marked form of inflammation of the mucous membrane of the bladder, which I have described, calling it an infiltrating, ulcerative cystitis.

Such cases present the following cystoscopic appearances: While the greater part of the mucous membrane is normally tinted and injected, one may see here and there, but especially in the trigonum, brownish patches of different sizes, the center of which is elevated in the form of a plateau. These elevations are covered with a pale yellow tissue that does not reflect the light as strongly as the normal mucous membrane; they vary in size from a hemp seed to that of a lentil. On introducing the operative forceps through the conducting canal of the cystoscope, one notices that the membranous tissue is difficult of removal, that it is very thick and rough and adheres to the ulcer; finally, after removal, a deep, discolored, irregularly granulating, ulcerative surface is disclosed. The tissue surrounding these ulcers is infiltrated and raised. If such diseased tissue lies in a favorable position, one is often able by bimanual palpation to feel the infiltration of the bladder wall. The bladder is the seat of a constant sensation of pressure, of heaviness, and indistinct pain. The act of micturition is not usually accompanied by much pain. The urine is ordinarily cloudy; the sediment contains detritus; filling the bladder shows its capacity to be reduced.

The etiology of gonorrhea is proven either by the history or by coexisting gonorrheal diseases. It is evident that in the treatment of this form of gonorrheal cystitis washing out of the bladder is not only useless, but directly injurious, on account of its distending the inflamed tissue. It is also easily seen why instillations of even the most concentrated solutions of silver nitrate are unsuccessful, as the caustic is retained by the thick membranous coatings of the ulcers and cannot reach the ulcerated base and produce the required reaction.

To treat these cases the bladder is filled with water; then intro-

duce a sharp curette through the operating cystoscope, scrape off the membrane, and curette the ulcerated surface. After this the bladder is washed. Usually this proceeding is sufficient with proper after-treatment (careful instillations of nitrate of silver) to quickly effect a cure. It is sometimes necessary in very obstinate cases to follow the curettage with cauterization by means of a silver nitrate pencil, or the galvanocautery. This surgical treatment can be performed without serious hemorrhage or pain, or without marked reaction. It is well to caution against the use of cocaine in such cases, as the mucous membrane of the bladder is in large part deprived of its epithelial layer, and sometimes absorbs so rapidly as to produce grave intoxication, or even sudden death. If necessary the sensibility of the bladder can be reduced by means of morphine suppositories. In case the excessive sensibility does not permit the distention of the bladder by means of water, general anesthesia may be employed.

This method is uniformly successful. Even cases of many years' standing have been cured within a few weeks. Although this treatment appears energetic, it is justifiable, since it is without danger and rapidly relieves patients from a chronic troublesome and disabling disease. Patients emaciate because of disturbed sleep. The capacity of the bladder is continually diminished, partly on account of the frequent voiding of urine, and partly on account of progressive inflammatory infiltration of the bladder walls and the consequent secondary changes. Finally, this treatment removes a constant source of danger, namely, secondary infection of the ureters and kidneys.

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THE ETIOLOGY, PREVALENCE, AND TREATMENT OF HYSTERIA.

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In this paper I desire to state by way of preface that I claim nothing original; I only desire to call attention to a subject which, it seems to me, does not receive the attention from the profession that its increasing frequency calls for. For convenience I purpose to consider the etiology and prevalence of the disease together.

Hysteria is a degenerative psychosis, and, as Dr. Hare has very truly said, its treatment "requires more tact, perseverance, and industry than any disease in the domain of neurology." Until quite recently, although it has been recognized that it affects men as well as women, it has been claimed to be much more prevalent among women; but it has been shown by Marie and Souques that in the Paris hospitals hysteria is much more frequent among men than among women, and in this country it is becoming much more frequent among men than formerly.

The greater number of cases in both sexes is found in the middle classes, and it is in the lower classes that we observe the greater number among the male sex. Heredity plays a conspicuous rôle in the etiology of this malady. Batault has shown that the transmission occurs most frequently through the mother. The earlier it occurs in life, if independent of accidental or external conditions, the more likely it is to be of hereditary origin. It is associated with all forms of degeneration, and this fact accounts for its frequency, no doubt, in the age in which we live, which if not one of degeneracy, is one that contains a greater number of degenerates than has been observed in previous ages. This fact cannot be overlooked by any observing and thinking physician.

While direct and similar heredity is frequent, the indirect and dissimilar heredity is more frequent as an etiological factor. According to Feré it "is associated, both individually and in the family, with neurosis, psychosis, organic diseases of the nervous system, arthritism, tuberculosis, and all affections which betray a congenital vice of organization." The use of stimulants, both alcoholic and drug, and disturbances of nutrition so common at the present time, together with overstrain in study and business competition, and all conditions that result from the present fast life which we live, are prominent factors that tend to overthrow the harmony

of the nervous system, and result in the condition of an enfeebled will-power, and to render the individual unable to maintain self-control. Any condition which may lead to depression of the nervous system, or any disturbance of nutrition, either mental or physical, may cause hysteria, and such condition may be hereditary or acquired.

Strange as it may seem, the victims of this malady may, and often do, present the most healthful and vigorous appearance. A young married woman came under my observation in one of the most violent hysterical outbreaks that I have ever witnessed. She presented a most robust appearance, was large, unusually well developed, with a head of hair that nearly reached to the floor when she was standing; she was in good flesh, and all the functions apparently normal; she had a drunken father and a nervous mother. She had been indulged in every fancy before marriage, and because her husband, a hard-working and moderately well-to-do railroad man, declined to provide her with a new silk dress, claiming that he could not afford it—which was true—she proceeded to develop a fit of hysteria that called into service a physician and a nurse for a week, and in the meantime she managed to smash nearly all the furniture of her room. Another young single woman, after a slight misunderstanding with her lover, became unconscious for hours, and developed violent convulsions which required the services of a nurse and physician, and alarmed the entire household. This patient was chlorotic, and this condition is quite frequently followed by hysteria. It has been observed in children of both sexes, though it is more frequently observed in girls than in boys. It has been observed as early as eighteen months or earlier. It quite frequently develops after an injury as an exciting cause, though in these cases there is almost always a constitutional tendency; after injuries from railroad accidents, or after those which are accompanied with fright; anger, exaltation of the imagination, religious enthusiasm, vicious education, strange beliefs, stories of spirit-presence, ghosts, etc. In the youth of both sexes it not infrequently results from masturbation or excessive venery, and it is a common companion of neurasthenia and many physical conditions resulting from general debility, especially where the mind is in an anxious state from fear of evil or unfavorable results. It is quite frequently epidemic and contagious, affecting a large number in a community, especially after some local calamity or religious excitement.

Many of these cases are cured by Christian Scientists, or faith-cures, and the average physician is too apt to overlook these cases,

and fail to give them the attention that they are sure to get from some source, and hence he loses many a patient, and fails to get the credit which he might secure by a little more pains, as well as the remuneration which is justly his due.

Briquet held that diseases of the reproductive organs do not predispose to hysteria any more than other diseases, but it has been my experience that morbid conditions of the ovaries and testicles are especially liable to be followed by hysteria, and quite frequently a mere functional disturbance of these organs is quite as liable, if not more so, to be followed by hysterical manifestations as are the more severe organic diseases. In other cases, however, we find the hysterical conditions remain after the removal of both ovaries and testicles; in fact, in some cases, the hysteria only shows itself after the removal of these organs.

Hysteria is quite common in prostitutes who have been indulging freely in alcoholic and drug stimulants, and it not infrequently follows autointoxication and poisoning from infectious diseases, and from mineral poisoning. It likewise follows severe hemorrhage, diarrhea, and overwork of all kinds. In the higher classes it may follow, in women of leisure, where the vitality of the system is often lowered from want of healthy exercise, with indulgence in sensational reading and with an active imagination. Finally, the hysterical show the signs of degeneracy, and it occurs in men who tend to the feminine characteristics, and in women who tend to the masculine.

In order to treat hysteria successfully, the physician must familiarize himself thoroughly with the nature of the malady, and as there are many agencies at work to this end he must make a careful study of each case that comes under his observation.

In the young subject much can often be done by way of prophylaxis. The hereditary tendencies must be met by proper education and development. If the mother be a nervous, hysterical person, the child should be removed from her care, and a nurse selected that is properly qualified by temperament and training. All trained nurses will not do to care for these cases. Such a nurse should be free from nervous tendencies, and she should be especially trained for this kind of work. The child must be well-nourished, and taught self-control as a first principle, and as she grows older she must be taught that the world was not made for her especial benefit, and that she can only obtain concessions in proportion to her willingness to grant them. The child should be made to associate with children free from all nervous and hysterical tendencies, and must be

guarded against all occasions of violent emotion and cause of worry, and she must be especially guarded against a solitary or idle existence. This latter admonition must be considered with much care, for subjects of hysteria usually have a natural aversion to every occupation, hence much care and patience must be exercised in leading her in the proper direction.

All excesses must be carefully guarded against, either physical or mental, and girls at the age of puberty must be watched with the most intelligent care. In fact, everything that tends in any way to depress the nervous energies must be studiously avoided, and on the other hand everything that tends to tone up the nervous system must be as studiously provided.

According to Briquet, one-fourth of the daughters of hysterical mothers suffer from the same malady. It is well that we consider the question of marriage in this connection. What breeder of stock would use animals for breeding purposes that would produce a progeny one-fourth of which would inherit a diseased condition? Besides this it is quite a frequent occurrence that hysterical subjects transmit to their descendants nervous diseases of the most varied sorts. Nevertheless absolute prohibition of marriage of hysterical women would undoubtedly inflict a great wrong, but there are many women who are victims of this malady who should be discouraged from marriage, for in such the consequences of the married state, together with child-bearing and lactation, would be followed only by the most disastrous results, not only to the mother, but to the offspring as well. In many of these cases the physician is often obliged to assume tremendous responsibility in giving advice, and I am persuaded that in the great majority of cases where hysteria manifests itself in the female at or after puberty, he is only justified in sounding that famous admonition of *Puck*, "Don't!"

In the treatment of hysteria where the malady has become established, we must take our cue from the nature of the disease almost entirely, and if the teachings of modern neurologists are correct, which I have no reason to doubt, we understand the nature of this disease as well as we understand anything in neurology. In a word, it has been shown by Charcot, Feré, and their followers that it consists of a fatigue or exhaustion, produced in the great majority of cases by malnutrition or functional disturbance, of the neurons of Waldeyer, which consist of the nerve cell plus the axis cylinder and other processes. To restore this loss of function is the problem of treatment. It has been found by experience that there is no better way as a first principle to restore lost nerve function of this charac-

ter than by a complete change of the patient's accustomed life and surroundings. The patient should be sent away from home and friends. If possible, she should be sent to some institution or home where she can have special treatment, a complete change of nourishment, change of habits, and be placed in charge of a nurse trained to care for such cases. The process then should consist of building up the entire system in every possible way. Special conditions must receive special treatment. A life in the open air, moderate exercise, association with those who are free from nervous tendencies, tonics, nerve sedatives, nourishing diet, and a general course of education of the nervous system, are all demanded. Suggestion is often of much benefit, but hypnotism proper, in my judgment, is not to be advocated. Hypnotism is in fact an induced hysteria, and tends to weaken the neurons rather than to give them tone, which is the object to be attained. Hypnotism may relieve certain symptoms, and may be called for in certain cases and under certain conditions, but the repeated use of it should be condemned. Electrical treatment is often of great advantage, especially the static current. Electric baths, two or three times a week, are often advisable, but they should be given with much care and not too often, and the dosage of electricity should always be light. General galvanism, or faradism, two or three times a week, and in séances of five to six minutes, is often of much benefit. The static current is by far the most beneficial, but it should never be given to cause any discomfort to the patient. The shower-bath is also of much benefit in many cases, but the temperature must be carefully guarded, for in some cold is not well borne, and the milder temperature must be substituted. Massage may be indicated and often is of value, especially where there is great weakness, and a sufficient amount of exercise cannot be taken. An abundant amount of easily assimilated food must be always provided, and plenty of sleep must be had.

Certain symptoms require special attention. The convulsions are of the greatest importance. In such conditions hypnotism may be of use in warding of attacks, but it should not be continued, as stated before. A few whiffs of chloroform or ether may be administered, but better still, a pearl of nitrite of amyl broken into a handkerchief and inhaled will act promptly and effectually. The old domestic remedy of throwing a pailful of cold water in the face of the patient in a convulsion of hysteria may be effectual, and perhaps justifiable if there is nothing else at hand, but it can hardly be termed elegant treatment at the present day. It is rarely

necessary to hold the limbs of a patient in these convulsions, and the less attention paid to the patient the better after the proper remedy has been administered. Onlookers should not be allowed, as they make the patient worse by their presence. Pressure over the supraorbital nerves, which can be made to cause much pain, or pressure over the ovaries, may cut short a convulsive attack, but the latter may be undesirable in some cases for obvious reasons. The hypodermic use of morphine is not followed with the good results that might be expected. A dose of from ten to twenty grains of chloral hydrate in milk per rectum is preferable, and often serves a good purpose.

In cases of anesthesia, aphonia, spasmodic cough, mutism, deafness, amaurosis, pharyngeal spasm, paralysis, contracture, etc., cutaneous irritation by the electric brush, or sinapisms, are indicated and are usually efficacious. Suggestion may also prove successful in some of these conditions, but it will take time to establish a cure, as until the lost function is fully restored we cannot expect these symptoms to be entirely relieved. Contractures often last a long time and require careful treatment. They should be met early with massage and electricity, and often the static current will be of great value. The visceral symptoms, such as hemoptysis, hematemesis, salivation, dyspnea, etc., call for no special treatment, but will be subdued by the general principles already indicated. Charcot called attention to the importance of isolation in cases of hysterical anorexia. Well-regulated discipline is of first importance in this condition, and the taking of food is to be insisted upon from the first; and the stomach-tube must be used without hesitation if the command of the physician is inefficient. Food is often vomited when taken, but retained if administered through the stomach-tube. Suggestion may be followed with good results in some of these cases.

In conclusion, we must first have a clear conception of the character of the malady, and every case is a study by itself; but with careful study, patience, tempered with good judgment, we may expect our efforts to be followed with a fair share of good results. Hysteria must not be looked upon as a fault of the patient, but as a disease which calls for the closest care and attention of the physician, and unless we look upon it in this light we cannot expect to have our efforts followed by success.

THE BORDER-LINE OF INSANITY.

BY JAMES C. PATTERSON, M.D., PHILADELPHIA.

The problems which harass an alienist in the diagnosis of a case lingering on the border-line of insanity are not so much medical as legal in their nature. The law demands a definite statement of the physician frequently at a time when he is in greatest doubt. At this time it is of importance that he should be able to speak definitely on this subject, both for his own and the patient's welfare—for his own, because such cases attract notice, and the public, knowing nothing of the difficulties surrounding the case, will excuse no mistakes; for the patient's sake, because it is no light matter to decide that a man has lost his reason.

The necessity for a diagnosis is not so urgent from the medical standpoint, because it makes but little difference in the treatment how close the patient comes to the border-line, and whether he has actually crossed it.

Unfortunately there is no milestone on the pathway of the disease by which we can judge of the progress of the case; there is no line over which the patient steps which permits us to decide definitely. Insanity is a state of mental illness which deepens as a rule slowly and insensibly, so that it is hard to place one's finger on the precise spot over which the patient glides into actual insanity.

According to the division of one well known neurologist there are three sets of symptoms which must be carefully considered before any diagnosis can be determined:

1. Changes in the character and acts of the patient.
2. Changes in the emotional nature of the patient.
3. Changes in the mentality of the patient.

It is alleged by many neurologists, and generally believed by the profession, that there is one symptom which is absolutely pathognomonic of insanity; this is the "insane delusion." According to some authorities this symptom is necessary to show the presence of insanity. In my experience, however, the importance of this symptom has been greatly magnified. There are many cases of mental alienation well developed in character which present no delusions. For our understanding of the nature of insane delusion it is well to define it precisely, for much confusion exists as to its exact meaning. An insane delusion is a false belief capable of demonstration, but out of which the patient cannot be reasoned. For illustration, you close your eyes and imagine that you hear a voice; on opening

them you see that there is no one present and no possible source for the voice, and you realize that you have been the victim of a delusion. If after demonstration that there is no possible source for the voice, you still persist that you heard it, then the delusion becomes an "insane delusion." In other words, you must be able to correct the testimony brought you by one sense by that given you by another. The essence of the whole process is the *loss of the power of discrimination or judgment.* It is necessary, of course, that the matter in question be capable of actual demonstration; the Buddhist cannot call the Christian insane because of his firm belief in things not capable of actual demonstration, nor, on the other hand, can the Christian call the Buddhist insane, because in neither case are their beliefs capable of demonstration.

In returning to the consideration of the first question—that of changes in the character of the patient—we must not make the mistake of comparing the patient with any standard of right and wrong. He must be compared with his previous condition, as he is—as he was. If he was an honest, upright man, is he so now? If he was affectionate, is he so now? If he was formerly of a melancholy cast of mind, is he now unduly hilarious? And so on through the elements which make up character. The emotions and the mental acts are really a part of a man's character, and they should be carefully studied with reference to their condition in the past. It is most essential to see that an actual change has taken place; it often happens that a profoundly elated or a profoundly depressed state of mind has always been the patient's characteristic.

For the sake of convenience we divide insanities into two forms, one where there is distinct evidence of organic change in the brain tissue, while the other, or "pure insanities," has apparently no dependence on organic change.

The following case pictures typically the development of a case of insanity. It is that of a woman about 45 years of age, who is happily married and has a number of healthy children. She told me that she knew that she was ailing, and that she knew the cause of her trouble. Two years ago, she states, the neighbors began to abuse her; they persisted in this treatment without explanation until the matter preyed upon her mind. Last year there arose in her a dread of something impending, which still further depressed her mental condition. Her trouble now began to assume definite shape in the form of a lion, which she acknowledged she never saw or even heard, but against which she felt it was necessary to protect herself and her children. For this purpose she hid

hatchets and hammers in convenient places about the house. She now began to hear voices calling to her, and she looked for the persons to whom she supposed they belonged, with no success. She felt sure that the sounds did not originate in her own head, but she was unsuccessful in finding the origin of the voices, because as she approached the voices receded. Gradually she states she was able to notice that there was but one voice calling to her; it was always abusing her in roundest terms.

She had no headache, and she slept fairly well, but could not read because she was so annoyed by the voice calling her. Outside of this condition which she relates, her sister states that the patient attempted suicide, not from any desire to die, but rather in obedience to the "voice."

The woman's family came for advice as to her condition and treatment. It is necessary to consider the patient's case fully. The first emotional change was in the sense of an impending calamity; with this there seems to have been no hallucination of sight. She heard voices, and at first she tried to prove their actuality. This condition has deepened slowly, until now she firmly believes in their existence and is willing to give up life at their command.

Undoubtedly the woman is a paranoiac, the outcome of the gradual ill-development of the brain, frequently designated "melancholia." The relation between the emotional change and the delusion is an interesting one. Some alienists hold that the delusion arises from the emotional change, while others hold that the delusion causes the emotional change. Personally I think both views are wrong; I believe they both arise from the same causal factor.

Classification in brain troubles is still unsatisfactory, for insanity is a symptom, not a disease, just as dropsy is a symptom; but for convenience we group together these forms in which there is no apparent brain change, because we can as yet distinguish no organic change. The time may come when they will be widely separated.

In regard to expressing an opinion in these cases it is well to remember that 60 per cent of these patients get well. The more rapid the onset as a rule the more rapid the recovery, for here the brain has not had the opportunity to form permanent mental changes.

There is unfortunately but little to be done for this woman, but the question at once arises, Should she go to an insane hospital? It is my belief that the insane hospital holds the same relation to the insane patient that the general hospital holds to the surgical case. If all that is required can be had at home, then I would say keep

her at home. The majority of the inmates of insane hospitals are allowed to mope and study themselves until they sink deeper into the mire of their disease, with death as the only relief. If at home she can be amused and not irritated, she may be roused out of herself and improve. Impelled by the "voice" she has attempted suicide; this may occur again, or it may take the form of demanding the death of her children. This impulse can exist with a considerable amount of mental soundness, which to the public may be sufficient to prove her sanity, but the most dangerous lunatics are of this class. Hence my advice is, to use moral and mental means to combat her trouble; give her occupation, pleasant, agreeable tasks, and treat other symptoms as they arise; see that she gets plenty of sleep; remove all irritating elements in her life; and exercise careful watchfulness.

BOOK REVIEWS.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. de Schweinitz, A.M., M.D. Third Edition, Thoroughly Revised. Philadelphia: W. B. Saunders. 1899.

This third edition of De Schweinitz shows some increase in the size of the volume, but it is still the same handbook of the earlier editions. Particular attention has been given to the relations which microorganisms bear to many ocular disorders, especially the various forms of conjunctivitis. The articles on astigmatism, acute and chronic retrobulbar neuritis, diseases of the sinuses, color blindness and its detection, and the treatment of the insufficiencies of the ocular muscles, have been rewritten in view of the advances which have of late been made in these subjects.

Chapter I deals with general optical principles; it is too short to be of much value. At the same time we presume it was necessary to introduce it, in order to make the work at all complete.

Chapter II is devoted to the examination of the patient and the functional testing. It is a practical statement which will be appreciated by beginners in ophthalmology or those who study the eye with a special reference to its relation to general medicine. The same is to be said of the succeeding chapter upon the use and theory of the ophthalmoscope. The chapter on normal and abnormal refractions is in the main good, but it will hardly commend itself to those who are struggling to master this subject without the aid of a teacher.

The chapter on diseases of the eyelids is brief, and yet it deals with all the more usual conditions that are met with in practice.

Conjunctivitis neonatorum is divided into two types—those in which the gonococcus is present and those in which other organisms are sometimes found, the latter pursuing a much milder course. Crédé's plan of prophylaxis is recommended, after disinfection of the sac is accomplished by the use of peroxide of hydrogen which is free from acid. The author mentions that he has secured good results from boric acid, weak solutions of mercuric chloride, and formaldehyde. He especially commends the frequent insertion of vaselin between the lids.

Diseases of the sclera are adequately treated in a short chapter, which includes an account of episcleritis and states that episcleritis is one of the conditions so frequently included in the forms of conjunctivitis, and which in consequence is not properly treated.

Special chapters are assigned to diseases of the iris and those of the ciliary body.

One of the longest chapters in the book, excepting that dealing with operations, is that devoted to a study of the movements of the eyeballs and their anomalies. As an example of the judicial faculty, we would commend the paragraph which speaks of monocular diplopia. The author distinctly refrains from expressing an opinion of his own as to the origin of this condition, but gives seven explanations which have been proposed: "(1) By anomalies of refraction, particularly astigmatism; (2) by opacities in the cornea or lens (see also p. 397); (3) by irregular cramp of the ciliary muscle; (4) by com-

plete or partial constriction of the eyelids, by which they are made to impinge on the cornea (G. J. Bull); (5) by hysteria, or allied functional nervous disturbance; (6) by organic disease of the brain or its membranes, associated with abducens paralysis (Gunn and Anderson); (7) by simulation, the symptom being an invention of the patient for the purpose of magnifying the result of injuries."

The book is handsomely issued by the publisher and contains 255 illustrations and two chromolithograph plates.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D. Vol. I. Philadelphia and New York: Lea Bros. & Co. March, 1899.

This volume contains the surgery of the head, neck, and chest, diseases of children, infectious diseases, including croupous pneumonia, laryngology, rhinology, and otology. The contributors are Alexander Blackader, J. Chalmers Da Costa, Ludvig Hektoen, Robert L. Randolph, W. S. Thayer, and A. L. Turner.

The series of works which this volume initiates is intended to occupy a unique position in medical literature. Unlike many of the annuals and yearbooks which have appeared, this purports to be more than a condensation of medical literature. It does not pretend to be a record of all that is contributed to a given subject, but it is the judgment of the contributor as to what has been the most important recent advance on a particular subject, together with such comment as the contributor chooses to make. In a word, it aims to be "a well-told tale of medical progress in all its lines of thought, told in each line by one well qualified to cull only that matter which is worthy of his attention."

A superficial examination of this first volume shows that the work of the contributors has been well done, and in the various subjects treated no material advance is unrecorded.

As a sample of some of the comments we quote the following, in summing up a brief account of the late proposed operations in epilepsy: "We confess that we cannot grasp the utility of such procedures as removing the cervical ganglia or stretching the pneumogastric. It is surgery too profoundly scientific to be safe or successful. It is founded upon hypothesis, not even upon theory. It deals with some controverted points of physiology as if they were mathematical certainties. It seeks to alter stimulation and to affect inhibition, as though we knew all about such influences, could record their force with a gauge, measure their area with a rule, and trace their direction with unfailing precision."

Some overlapping is necessarily inevitable in a work arranged as this one is. Diphtheria is considered under diseases of children, where five pages are devoted to the subject, and again under the infectious diseases, where sixteen pages are given to the topic. There is a most excellent discussion of the modern treatment of typhoid fever; from the arguments there set forth it is easy to see that the leading teachers are by no means agreed as to the best management of this disease.

The work forms a most acceptable addition to current medical literature, and will prove of especial value to the busy general practitioner, in keeping him abreast of the more important advances in medical literature.

A Ready Reference Handbook of the Diseases of the Skin. By George Thomas Jackson, M.D. Third Edition, Revised and Enlarged. New York and Philadelphia: Lea Bros. & Co. 1899.

The first edition of Jackson's work was issued in 1892, and the second edition in 1896. The work has been well received by the profession and without doubt forms one of the best guides for the beginner in dermatology that is to be found in the English language. In this edition the author follows the same alphabetical arrangement that was used in the former editions, but the question of classification is not wholly neglected; that given by Crocker is reproduced.

No department of medicine is so loaded down with a superabundant terminology as is that of the skin. The scintillating effulgence in this respect is especially apparent in the examination of this work, which contains, seemingly, about all of the words to distinguish the varying forms of diseases of the skin. This redundancy of words is, of course, not a fault of the author, and we think he does students a real service when he puts them in his book where they are convenient for reference and at the same time do not interfere with the study of the text. The author reproduces his dermatological "don'ts," which have appeared elsewhere, and which have been extensively copied. In view of the hundreds of terms used in the text, we would especially call attention to the following: "Don't make your diagnosis from the history of a case, because if you do you will often be led astray. Make it from the eruption you see, and then substantiate by the history of the case if you will." "Don't fail to think of the possibility of every case being either syphilis or eczema, and don't fail to master these two diseases as thoroughly as possible, because if you learn to recognize these two, you will have gone a long way in diagnosis. If they can be excluded from the field of possible 'maybe's' the diagnosis is considerably narrowed." With so simple a statement of the outlines of dermatology before us, we regret that the author does not undertake to write a work based upon the above principles. It would certainly lighten the work of those who are called upon to treat diseases of the skin and who have had comparatively little experience in their study. The work is not extensively illustrated, and some of the plates which are introduced are of but little help in differentiating the disorders of the skin.

The work is well issued by the publishers.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume XX. Printed for the College in Philadelphia. 1898.

This volume of transactions includes seventeen papers read before the College, an abstract of the report of the Library Committee, and a list of the papers read before the Sections of the College. There is a list of members, which includes most of the leading practitioners of Philadelphia. The typography of the book is excellent, and some of the papers are worthy of special commendation, notably one by J. B. Shober on anomalous positions of the colon. This is especially interesting at this time, when the relations of the large bowel are closely studied with reference to abdominal tumors.. The description of the skeleton of the American giant, by Guy Hinsdale, originally appeared in Medicine. There is an excellent paper on the value of the Brand bath in typhoid fever, by H. A. Hare and C. A. Holder.

EDITORIAL COMMENT.

CLINICAL VS. DIDACTIC TEACHING.

Recently an active discussion has been inaugurated, touching the relative merits of didactic and clinical teaching. On the one hand the editor of the *Philadelphia Medical Journal* has pronounced didactic teaching as quite useless. Didactic methods have found two strong champions in Barton Cooke Hirst and Hobart Amory Hare. A recent letter of L. Harrison Mettler, in the *Journal of the American Medical Association* of April 1, 1899, goes to the center of the discussion more nearly than anything we have seen. He points out that the clinical lecture is, in its essence, an illustrated lecture. He makes the point that the mere presence of a patient in the amphitheater does not constitute a clinical lecture; that in fact many clinics, as given, are essentially not demonstrative, but are merely didactic. A typhoid fever patient, wrapped in a blanket, who has answered a few questions regarding his subjective sensations, is not in any sense a clinical demonstration, and the lecture delivered in this way is essentially didactic. The point is also made that the demonstration of an eye operation upon an enlarged model may be of very much greater value than the operation carried out upon the patient in the amphitheater, where it is impossible for more than the operator and his assistant to actually see what is being done.

Mettler also makes the point that clinical and didactic teaching cannot be weighed against each other, but rather that it is the method of teachers. Some have the ability to make a mere verbal description so impressive that it becomes exceedingly effective as a teaching method. To many of these a means of illustration is rather a hindrance than a help. The majority of teachers, however, find that every practical means of illustration is useful, and it is wise to appeal to the eye as well as the ear. Mettler's argument is the best statement that has appeared in this controversy.

Medical education is in a transitional stage in this, probably not differing from education in general; it is but a division of pedagogics. We are rapidly breaking away from the old methods of training the memory as the sole means of mental discipline, and are now trying to train the reasoning powers as well as the eye, ear, and hand. We have learned that the words knowledge and ability are widely different in their significance, but it remains to apply these

principles in an effectual way. Heretofore it has been thought that every leading medical man should be a teacher. Oftentimes the very qualities that lead to eminence in our profession are the ones which least qualify one for the position of teacher. It is not always the most advanced, original thinker that is the best teacher, nor indeed is it always the most learned. The true teacher is born, not made; he must possess that indefinable quality which enables him successfully to impart knowledge to others. If he have this, and with it enthusiasm, learning, and knowledge, then he will instinctively choose the most appropriate means of imparting knowledge to his pupils. Pedagogics is deserving of most exhaustive study. Its present basis is empirical to the last degree, and compared with which therapeutics is almost an exact science. Medical pedagogics has been illuminated by many disputations and much theorizing, but it is hardly more advanced than the average theological controversy.

A QUESTION OF ETHICS.

The February issue of the *Medical Examiner* has an editorial dealing with the system of ethics in vogue among physicians. The writer of that editorial has done us the honor to quote an editorial entitled "Selling Patients" which appeared in MEDICINE for January, 1899. We feel grateful for the quotation, which is in full, as in this way our editorial reaches a large number of the profession. He says that questions of ethics produce more hard feeling between doctors than any other subject. In this discussion, however, we feel that none should arise, as courtesy is to ethics what bouquet is to old wine, and it is only in a polemical spirit that we wield the editorial pen.

At the outset we must correct an inadvertency into which the editor of the *Examiner* has fallen, in assuming the editor of MEDICINE was a practicing physician in Detroit. His residence and field of his useful labors are in Chicago. This correction is due to the profession of Detroit. We are gratified with the tribute that the editor pays to us personally, when he infers that we have a tender conscience which has not ceased to flail us for once yielding to the practice of commercialism. An old saying has it, "A prophet is not without honor, save in his own country and in his own house." It is a pleasure to have our qualities recognized in a distant city.

There is a great deal in the editorial of the *Examiner* with which we are in hearty accord. We believe that the adoption of correct

and honorable business methods as applied to the practice of medicine, in which one shall render honest services and insist that he has proper compensation, are correct principles. We must insist that the selling of patients is one that is not based on a correct business principle. We would especially direct attention to the closing paragraph of our editorial, which reads: "No one who watches the tendencies of professional life can fail to see that commercialism is rapidly spreading in the ranks of the profession. Whether this tendency is good or bad we shall not now attempt to say, but the practice of selling patients is one which would be condemned by even the most rudimentary system of business ethics." It will be noted in the foregoing that the question of commercialism was not discussed in our editorial.

The editor of the *Examiner*, we think, misses the point when he compares the practice of selling patients to the plan of some business houses in employing men to sell their goods. The latter, even though the traveling man is employed by another firm, is a perfectly legitimate transaction when it is known to all the parties concerned. A parallel case would be found in that of an architect employed to construct a building, who regarded the contracts as personal property, to be sent to the bidder offering him the highest commission.

We have always regarded the physician as the employee of the patient, and believe it to be the duty of the physician to do the best he can for a patient. Patients are not the legitimate prey of the physician to be plucked and then turned adrift. The compensation of the physician should be based upon services rendered, and, to some extent, upon the time and trouble incident to the services. Thus it is proper and right for a physician to charge a patient more for visiting him at a distance than when the patient comes to the office, and when visiting a patient in the night it is usually the custom to charge more than for a day visit, though the services in each case may be identical. Where no service is rendered no charge should be made. This is exactly the point at issue. As to whether or not a service is rendered to a patient in referring him to another practitioner, that is a matter that is within the judgment of the physician who refers the patient. Judging from the editorial in the *Examiner*, we would think that its writer, when referring a patient to another practitioner, thought it was a very great service indeed, and that consequently he was entitled to a considerable commission. With this we cannot quarrel. As for ourselves, we cannot look upon the reference of a patient to another practitioner as a service,

but rather in the nature of a hardship to the patient, rendered necessary by the peculiar circumstances of the case.

We are in sympathy with much that is said in the editorial regarding the code of ethics, and it is deplorable that so many in our profession live up to the letter of the code and daily violate it in spirit. We have always believed that earnest and faithful work, study, integrity, and patience were the key-notes of professional success. Perhaps in this we are old-fashioned, and we may be even "rudimentary," but the constitution of our mind is such that we are unable to take that broad view of things which is increasingly in vogue. We regret this, but it is our misfortune rather than our fault; we are simply doing the best we can.

If we ourselves were the subject of a surgical malady and our family physician deemed it necessary that a surgeon should perform an operation, we should thank him if he referred us to a man who in his judgment was competent; in addition, should he take the trouble to state our circumstances and arrange for a proper compensation for the services, we should feel grateful to him. If, on the contrary, we should learn that he had visited one or more operators and had carefully balanced the competency of one against the larger percentage of the fee offered by another, we should feel very unpleasant. After all, the whole question sums itself up in an old saying that we remember to have read somewhere in our early years — we think in a very ancient volume—and therefore it will not commend itself to advanced and advancing commercialism, namely, "Whatsoever ye would that men should do to you, do ye even so to them." We know that a modern paraphrase of the foregoing reads, "Do others lest they do you," and we would suggest this as a title for a leader in an early issue of the *Examiner*.

HONORARY DEGREES CONFERRED BY THE UNIVERSITY OF JAPAN ON SHO WATASE AND JOKICHI TAKAMINE.

Sho Watase, assistant professor of cellular biology in the University of Chicago, has received the degree of Doctor of Science, and Jokichi Takamine, also a resident of Chicago, the degree of Doctor of Engineering, from the Imperial University of Japan.

Jokichi Takamine was born in Tokyo, Japan, forty years ago. After he had finished his common school education he entered the Tokyo University, where he became deeply interested in the study of chemistry and engineering. After graduating he went to Scotland to pursue his specialties at the University of Glasgow. Here

he formed the acquaintance of Professor Mills and studied with him for several years. During this time he discovered a way to obtain pure diastase by sowing the seeds of microscopic fungus and procuring the diastase from the precipitation of the extract. Takamine was sent to the World's Cotton Exposition, which was held in New Orleans in 1883, as a commissioner from Japan. While in this country he formed a company with himself as head for the manufacture of diastase. He then returned to Japan for a visit of four years. At present he is on a lecture tour through the East.

Sho Watase is a graduate of Tokyo University and received his doctor's degree from Johns Hopkins University of Baltimore. He is a leading biologist, and belongs to that group of younger Japanese who have contributed much to scientific progress, the best known being Kitasato, the discoverer of the bacillus of bubonic plague.

THE PRODUCTION OF ANTIVACCINATION LITERATURE.

The following is copied from the last issue of the *Homeopathic Envoy*, it being credited to *Modern Medical Science:*

"Chicago, December 8. The son of John H. Duncan, noteteller of the Hibernian Banking Association, is dying at the Duncan home, 1212 West Monroe Street, of septic fever, resulting from compulsory vaccination in the public schools.

"There is no infectious disease—from measles and diphtheria to yellow fever and smallpox—that has not been successfully confined and stamped out by isolation and other proper sanitary measures. The need of fortifying themselves against poisons — organic — by habituation or 'antitoxin' toxins may, perhaps, be allowed to govern those who believe in it. But to enforce the crude, barbarous, antiscientific, and too often fatal measures upon protesting human beings guilty of no crime is an unspeakable tyranny worthy only of the unspeakable Turk. Public school privileges, to be sure, may be restricted according to the judgment of the proper authorities. It is not necessary for any child who dare not risk vaccination to attend the public school, though his right to the privilege may be another matter."

Suspecting that the above might not be authentic, we referred it to the health department of Chicago, who report that the child in question was suffering from diphtheria and that the vaccinal wound on the arm had become slightly infected by the carelessness of the parents. The above is a fair sample of the way in which antivaccination literature is manufactured. It is impossible to estimate

how often such an item will be quoted and how much distortion will take place as it passes through the hands of a score of compositors. Such items often increase in number when the original sources are not named. In a certain collective report of somewhat similar records we were able to identify the same case appearing as three separate instances, its appearance being accounted for by slight verbal differences and failure to credit original sources when successively copied in various publications.

CONSOLIDATION OF THE CHICAGO MEDICAL SOCIETIES.

The profession of Chicago is to be congratulated upon the success which has attended the effort to unite the various medical societies. Practically there has never been but one medical society in Chicago, and this has included the bulk of the entire regular medical profession in its membership. After the Chicago fire the meetings of the Chicago Medical Society were held on the west side of the city. With the rebuilding of the central portion the meetings down town were resumed, and it was thought that the meetings in the western portion of the city might with profit be continued. Accordingly they were conducted for a time as the West Chicago Medical Society, this name being finally merged into the Chicago Pathological Society, which is now a large and flourishing section of the larger medical body.

Within the last year most of the special societies have affiliated with the Chicago Medical Society, thus unifying the profession. The terms of the union do not, however, extinguish the autonomy of the various special organizations, as they can still hold their meetings when and where they choose and elect their own officers. Election, however, in all special societies presupposes membership in the Chicago Medical Society, and this provides for a vital union of the entire profession.

The Physicians' Club, which includes about 250 of the leading physicians of the city, and which was organized largely for social purposes and the discussion of extra-medical topics, has made membership in the Chicago Medical Society a requisite for membership in the Club.

About the only organization now remaining outside is the Chicago Academy of Medicine, but the bulk of the members of this latter organization are members of the Chicago Medical Society.

Great credit is due to Dr. F. Henrotin for his untiring efforts in bringing about this consolidation and thus increasing the power and influence of the local profession.

A DECREASE OF MEDICAL MEN IN ENGLAND.

In these columns we have recently referred to an increase of medical men in France and Germany. The British Medical Directory for 1899 shows a striking decrease in the number of young men who have joined the medical profession during the last year. It contains 34,944 names, an increase of only 91 in the last year. The increase shown in 1898 was 619; in 1897, 958; and in 1896, 730. The cause of this extraordinary decrease is thought by the *Medical and Surgical Review of Reviews* for February, 1899, to be due to the overcrowded state of the profession and the difficulty which prevails in finding suitable openings for young medical men. The distribution of the profession holding British medical degrees is as follows: London, 6117; Provincial England, 15,497; Wales and Monmouth, 1100; Scotland, 3394; Ireland, 2551; resident abroad, 3795; naval, military, and Indian medical service, excluding those who appear in other lists, 2528.

It would be interesting if we had accurate statistics for this country; but we shall be very much surprised if the next census does not show a marked increase, both absolute and relative, in the number of medical men in the United States.

REVIVAL OF DEMONOLOGY, OR OLD THOUGHTS WITH NEW LABELS.

A medical friend relates the following regarding a recent gathering of Christian Scientists. Among the simpler experiences was that of a woman who had a "claim" of grippe. She battled against the execution of the claim, sitting up all night repeating the formula, "God is good and so am I." In the morning the idea ("claim" is the latest word) was vanquished.

Another experience related was that of a young man, a machinist, who stated that it was a well-known fact that machinery required rest; it would not run indefinitely and do good work. His explanation of this fact was that machinery had no material existence, its operation as well as its product being but a result of the action of mind. Consequently, when the mental process by which the machine was produced and operated became tired, it was necessary for it to rest. This, he thought, explained such an attribute as fatigue, which could hardly be considered as belonging to mere inanimate matter.

Among other things he described a wood-working machine that had been set up in a factory. No sooner was it in operation than

the men who ran it were frequently injured. It was carefully examined by experts, and no differences could be found between it and similar machines, successfully and safely operated. This particular machine was finally returned to its makers; later it was again sold and set up in another shop. In its new location it continued its deadly work, maiming one and injuring another. For the second time it was returned, to be again sent out, this being continued until the machine had been sold seven times. Each time the purchaser demanded that it should be replaced by another. In every shop in which it had been placed there was the same story of death and destruction.

Before being returned the last time, the foreman in the factory in which it was made was sent out to make a thorough inspection. It promptly amputated one of his hands. This was too much! The machine was returned to its makers and relegated to the attic of the establishment, never to be operated again.

We fancy we hear the reader exclaim that this is a story from some barbarous country, where the belief in witchcraft and demons still prevail; we can assure him, on the contrary, that the incident we are relating occurred in the center of Chicago, among a people who to all external appearances are educated, apparently in the possession of their mental faculties, and who describe themselves as scientists and Christians. They listened to this story, and it was received by them with marked approval. The machine was a product of mortal mind, but was unhappily constituted and essentially evil in its operation.

Modern anatomists have found in the word atavism a convenient term to describe a reversion to a type that has disappeared in the evolution of a species. The evolution of society resembles the evolution of an organism; there is the same orderly progression from the simple to the complex. There is an adaptation to the environment, the disappearance of useless functions, and the development of others better fitting society to the changed conditions. If history is studied as the record of a sociologic evolution, a better understanding is obtained. The customs and beliefs of a past age often seem barbarous and incomprehensible; they are not to be looked upon as such, but regarded rather as the possession of a people, more or less well adapted for the time and circumstances. With progress has come change in customs and beliefs in consonance with the advancement of intelligence and civilization.

Just as in organic evolution, this orderly progress occasionally shows an atavism. Sometimes it is difficult of identification, as it

masquerades under a new name, but in its essence it differs not at all from its ancient prototype. It is a striking fact that the witchcraft of the Middle Ages should find its revival at the end of the nineteenth century in one of its centers of highest culture and refinement.

The parallel is exact; one has but to substitute the ancient for the modern terms to recognize the ancient belief. One of the fundamental beliefs of witchcraft placed inherent powers for good and evil in inanimate objects. The machine which we have cited was a product of mortal mind (spirit) — in this case a bad mortal mind (devil). The witchcraft of the Middle Ages was an eternal conflict between good and bad spirits. To propitiate bad spirits and obtain the favor of good spirits is the chief end of uncivilized man. So far as one can learn of the beliefs and practices of the so-called Christian Scientists, it is but the witchcraft of the Middle Ages, with its good and evil principles ever striving to overcome each other.

The *dénouement* of the story alone is different, due to the modern setting of the scene. In the Middle Ages a machine possessed of a devil as wicked as this would not have been relegated to a dusty attic, but disposed of by the public executioner in the market place, after an inquisition by the ecclesiastic authorities.

CHRISTIAN SCIENCE — THE NEW THEOLOGICO-PHILOSOPHIC THERAPEUTICS.

Edmund Andrews has an interesting paper under the above title in the *Journal of the American Medical Association* of March 18, 1899, based on a careful perusal of Mrs. Eddy's book, "Science and Health, with Key to the Scriptures." He reasons that eclecticism and homeopathy having lost their sharp separateness from general medicine, Christian Science fills the vacancy left by them. The book written by Mrs. Eddy has reached its one hundred and thirty-seventh edition of one thousand volumes each and sells for three dollars a volume; in it he finds a peculiar characteristic, namely, a steady habit of self-contradiction. This he attributes to her New England training and her extreme friendliness toward both "orthodox" and "liberalists." This characteristic is illustrated by the much repeated assertions that there is no such thing as disease, that it only exists in the mind; trailing directly in the wake of these assertions are manifold reports of cures of the severest cases of consumption, cancer, typhoid fever, etc. The explanation of this contradiction is "that disease does not exist to God, but that it is a

very 'solid and real' evil in the false belief of the mortal mind of the patient."

The punishment dealt to a "healer" who gives medicine is expulsion from the church; his duty is to exert his "mortal mind" to convince the "mortal mind" of the patient that he is well. Mrs. Eddy claims to have derived valuable hints from homeopathy; at one time she "made a very high homeopathic attenuation of *natrium muriaticum*, or common table-salt, and with one drop of that attenuation in a goblet of water, and a teaspoonful of the water administered at intervals of three hours, she has cured a patient sinking in the last stages of typhoid fever."

They still seem to be a little doubtful as to their skill in setting bones, though they have instances on record where dislocated bones have been set without touching them, and an audible snap has been heard as they returned to the socket. This is possible because "bones have only the substantiality of the thought which formed them." It would be interesting to see a non-existent bone, having only the substantiality of thought, which had been dislocated from a socket which never existed, going back without being touched into that imaginary socket with a thump audible to all the bystanders.

One of their favorite boasts is the cases "abandoned by physicians" which they have cured. One would think to read these reports that it was a common thing for a physician to leave a patient to die as soon as his case became critical.

The power of Mrs. Eddy doubtless lies in the genius she has for strong and eloquent appeal to those religious feelings which are common to all mankind, and by this she probably is able to cover a multitude of medical errors. Dr. Andrews thinks that Christian Science healers will at last find or make some plan by which they can avail themselves of the splendid resources of the physical sciences which at present are forbidden them.

LITIGATION SYMPTOMS.

Now and then in the course of our reading we come upon the use of the words "litigation symptoms," used to designate certain nervous phenomena occurring after an accident, usually one in which a person is alleged to have been injured by a common carrier. From a careful reading of these cases one learns that they are sometimes used to designate symptoms which arise before a suit at law has been instituted, or those which arise during the progress of the case. It

is difficult to know just what writers group under this designation; some refer to symptoms that are clearly hysterical or neurasthenic; others, again, seem to restrict the term to out-and-out cases of feigning. Sometimes they refer to a class of morbid phenomena which are greatly improved, if not wholly relieved, by what is known as a "greenback plaster."

There is no department of forensic medicine that has been so hampered by a cumbersome and oftentimes meaningless terminology as that dealing with personal injuries. For years we have been struggling with the more or less euphonious names, "railway spine," "railway brain," "spinal concussion," and the whole gamut of traumatic nerve disorders. In the name of common sense we ask, Why is it necessary to introduce another meaningless and indefinable term into the confused nomenclature of the subject? If these symptoms are feigned, why not call them so? If they can be classed among those belonging to neurasthenia, hysteria, hypochondria, why may they not be so grouped? It would at least furnish the student a fairly correct idea of what was meant in writings upon this subject.

WHISKERS AND ASEPSIS.

We note in one of our contemporaries a handsome engraving showing an operating-room with tile floor and smooth aseptic walls. An operation is in progress; it appears to be a laparotomy. The surgeon-in-chief and the four assistants are arrayed in gowns reaching nearly to the ankles. Doubtless these are aseptic. The heads of the surgeon-in-chief and what is evidently his first assistant are covered with white cloth. The details of the picture being a little indefinite, we can but suppose that these caps are of the same aseptic material of which the gowns are composed. We take it that the purpose for which these caps are employed is to prevent hairs or flakes of dried sebum from falling into the field of operation. Both the surgeon and his assistant have full beards. These are not protected in any manner, and it seems to us that a microbe might inadvertently fall from these bushy appendages into the open abdomen. Particularly would the danger be increased if the air were not perfectly still in the operating-room, as it is a well known fact that whiskers are likely to be blown about by the wind.

Before the days of asepsis it was the custom of physicians to wear long flowing beards, sometimes reaching to the waist and even below. The difficulty of managing them at the bedside was often considerable, and was sometimes met by tucking them inside of the

waistcoat, or having them tied into more or less graceful knots. Our increasing knowledge of asepsis, however, has relegated the long flowing beard to innocuous desuetude. However, a short and sometimes bushy beard is still allowed the surgeon, but we feel that it is scarcely to be tolerated if strict asepsis is to be reached, and certainly not unless the air of the operating-room is to be kept perfectly quiet.

THE PLAGUE.

Reports from Bombay and other infected districts show that the plague is on the increase. In a late number of MEDICINE we referred to the appearance of sporadic cases along the various routes of travel. Very late notices state that it has appeared in the Transvaal, and a doubtful case has arrived at Plymouth, England.

So far our knowledge of the disorder is practically confined to the discovery of the specific germ, which is credited to Kitasato. The manner in which the infection is propagated is still quite unknown, and no certain means of immunization or treatment has yet been discovered. That the disease will probably appear in the West before very long seems quite certain, but that the civilized lands, with proper sanitary regulations, have much to fear from the disorder is not generally believed. It is true that the focus of infection which appeared in the Vienna laboratory was stamped out in its incipiency; but it would be unsafe to draw conclusions from the success attending this effort, as the conditions would be quite different if a few cases were distributed in the densely populated and poorer quarters of one of our large cities. The ill success attending certain recent epidemics in which the method of propagation is definitely known does not encourage a hopeful view in case the plague should obtain a foothold either in this country or Europe. The epidemic of cholera in Hamburg is directly in point. At the time of its breaking out it was known that cholera was almost invariably a water-borne disease, and it was early demonstrated that the water-supply had become infected. With these definite facts at command, it was months before the epidemic was overcome.

For more than a year the plague in Bombay has been increasing in extent and severity. It is true that the population is somewhat difficult to deal with from a sanitary standpoint, but the fight has been directed by some of the ablest sanitarians in the service of the English Government. That the disease could be more easily managed in the crowded quarters of a city like Chicago, sections of

which contain foul and crowded tenements infested with rats, and whose alleys and narrow streets are reeking with decaying garbage, is by no means certain.

That rats are an important means of communication of infection is apparently proven. According to Simond, the plague-stricken rat infects the fleas which infest it. The specific microbe has been found in the intestines of the flea, and it is believed that they are an important means of conveying the infection from animal to animal, and from animal to man. Yersin has observed that plague bacilli multiply in the intestines of flies, and it is possible that flies may be an important means of spreading the infection.

SYMPATHECTOMY IN EPILEPSY.

Jonnesco reported to the International Medical Congress at Moscow a considerable degree of success in the treatment of epilepsy by the removal of the cervical ganglia. Dr. Carl Beck reported to the Chicago Medical Society, March 15, 1899, the results of four operations. None of these were followed by any improvement in the epilepsy, and he rejects the operation.

In 1885–6, at the time when Alexander proposed to ligate the vertebral arteries for epilepsy, the operation was done a number of times in this city. The late Professor Jewell was of the opinion that the beneficial effect of this operation was due to the section of the superior cervical ganglia in the high ligation of the vertebrals. He therefore recommended that the artery should always be tied as far up in the neck as possible, so that this portion of the sympathetic might be included. An editorial commenting on the cases operated on at that time appeared in the *Chicago Medical Examiner*, showing that results were less favorable when the sympathetic was included in the operation than in those of simple ligation.

The conclusions reached by that writer have been confirmed by Laborde in the *Gazette Hebdomadaire des Sciences Médicales* of March 8, 1899, in which he reported to the Biological Society of France his experiments in the treatment of epilepsy. He rendered guinea-pigs epileptic by transverse section of the spinal cord; he then removed the whole chain of the greater sympathetic with its ganglia. This had the effect of intensifying the traumatic epilepsy.

This confirmation by experimental research and clinical observation is sufficient to definitely settle the status of sympathectomy. It is possible that this operation may be of some value in exophthalmic goitre, but as a remedy for epilepsy it should never be employed. If it has any effect upon the convulsions, it usually aggravates them.

SHALL THE AMERICAN MEDICAL ASSOCIATION CHANGE ITS MEETINGS?

It seems almost iconoclastic for one to offer any radical suggestions regarding the future of this Association, and we should not attempt to do so in the present instance were we not quite confident that our proposed changes were devoid of ethical significance.

When the Association was first organized the profession consisted of a comparatively small number of physicians, the bulk of whom lived in the middle and eastern States. With the growth of the country, there was an increase in the facilities for transportation, so that for many years it was possible for a member to attend the annual meetings of the Association without great loss of time or money. With the settlement of the whole country, a large proportion of the profession have each year been deprived of attending these meetings, unless they happened to be located in their immediate neighborhood. As organized, the Association is supposed to be a representative body based upon a membership of local and State societies. Unfortunately the State societies, except in a few of the more populous States, have not proven of practical value. In many States the profession is so scattered and so few in number that a vigorous and flourishing State society cannot be supported. To supply these deficiencies various tri-State societies have been organized, and some larger bodies, such as the Mississippi Valley Medical Association. We understand that the isolation of the Far West will lead to the formation of a western society, to provide for the needs of those living upon the Pacific coast.

The organization of the American Medical Association has followed too closely political boundaries. There is no good reason why the profession should be organized by counties and States, but less arbitrary and more natural divisions should prevail. There is no reason why the present various medical organizations should not be recognized as branches of the American Medical Association, and if necessary new ones created, so that at least one good annual meeting of a representative medical body could be held within easy reach of every regular practitioner of medicine. The American Medical Association should meet only once in two, or better, once in three, years in some central and easily accessible portion of the United States. In that way an attendance could be secured and interest maintained, which is not possible now with the Association meeting about in different parts of the country each year. The country has become too large to admit of a successful annual meeting. Several of the recent meetings of the Association have been attended by less than

1500 physicians, and a meeting, wherever held, that announced a registration of over three thousand has been considered a great success. These numbers are simply ridiculous. A profession that numbers nearly 125,000, to be represented by little better than one per cent of its entire number in such a meeting, is to belittle the pretensions of the Association as a representative body.

The disparity between the attendance and the total number of the profession will go on increasing, and especially will it be more marked after the next census has added the regular physicians of Porto Rico, Hawaii, and the Philippines, with still other countries to hear from.

We feel sure that the triennial meeting, with strong district societies holding annual meetings, is one of the necessary changes, if the Association is to maintain its supremacy as the leading medical organization of the country. Of course, this will be a departure from the time-honored methods of the British Medical Association, but the conditions prevailing in the two nations are radically different. A meeting of the British Association anywhere in Great Britain is within easy reach of every member in Ireland, England, and Scotland.

RAPIDITY OF VISION.

J. F. Valentine, chief surgeon of the Long Island Railroad, has met with a comparatively small number of color-blind men, while he has seen many men beyond middle age who have a limited range or visual slowness. Valentine, in testing for these visual defects, made use of an apparatus by which flags could be displayed for an instant. Different colored electric lights were successively made to glow momentarily, and the person being examined was asked to name the colors. This not only proved a test for the perception of colors, but also of the rapidity of vision. It is possible that systematic studies along this line might give valuable data in the study of the various forms of psychical blindness, hysteria, etc.

ABSTRACTS.

MEDICINE.

Diet in Typhoid Fever.—

W. S. Thayer, in *Progressive Medicine* for March, 1899, has prepared such an excellent summary of recent studies on this subject that we reproduce nearly the whole of his article.

Bushuyev makes an interesting appeal for the more liberal feeding of patients with typhoid fever. He enters at length into the literature concerning the diet in typhoid fever. Most of those who object to liberal feeding base their objection not so much on the insufficiency of the digestive juices as on the danger of hemorrhage or perforation; but the changes resulting in perforation rarely appear suddenly—they come on gradually. They are so distant from the stomach that by the time substances, even though hard to digest, reach these areas, they are so far changed that one can hardly imagine that they could actually injure the intestine. Wholly indigestible substances, such as fruit seeds or skins, might injure the gut, but they are, as a rule, so far rolled up in mucus or intestinal contents as to be harmless. In autopsies on cases of typhoid on the thirtieth day or later, in patients who had been liberally fed, the intestine was in the same condition as under ordinary typhoid diet. One never hears of perforation of a tuberculous ulcer due to food. The cause of perforation is the nature of the ulcer and not the character of the food. Bushuyev knows of nothing to support the view held by some, that injury to the intestinal walls by solid food might provoke a reentrance of the bacilli and an increased frequency of relapses. (On the other hand, we know that the organism is present in very small numbers, or, indeed, absent from the intestinal tract.—W. S. T.)

In the year 1895–1896 Bushuyev arranged with his colleague, Dr. Sartsievich, a skeptic with regard to the advisability of liberal feeding, to divide all patients who entered the hospital into two series, one of which should come under Bushuyev's care, one under that of Dr. Sartsievich. The patients of Dr. Sartsievich received only milk, as much as two liters in the twenty-four hours, and one or two eggs soft-boiled or in Stokes' mixture. On the other hand, Bushuyev's patients were allowed, usually, 715 grammes of white bread, 170 to 180 grammes of boiled meat, a cutlet, and soup. If

possible, there was given in addition a small quantity of supplementary milk and egg. The patients of both departments were allowed tea, wine, and water. The following table shows the result:

	Bushuyev.		Sartsievich.	
Whole number of patients	80		74	
Recovered	72	(90 per cent)	65	(87 per cent)
Average days of illness on entrance into hospital	7.5		5.8	
Average day on entrance to division	8.4		8.3	
Day on which recovery was complete	49.5		55	
Number of days spent in hospital	42		49.2	
Days of fever in hospital	18.9		22.3	
Dismissed incapable of duty	6	(8.3 per cent)	10	(15.4 per cent)
Died	8	(10 per cent)	9	(12.1 per cent)
Average day of entrance to hospital	8.5		5.8	
Average day of entrance to division	9.1		8.4	
Day of death (average)	28.6		26.7	
Number of days between entry and death	20.1		19.4	

The figures, though small, speak decidedly in favor of liberal feeding, especially inasmuch as the cases coming under Bushuyev's care entered the hospital at a later period of their illness. The author especially emphasizes the fact that though his patients received a relatively liberal diet, yet the conditions of a military hospital rendered it impossible to give them anything like a proper regimen.

From the table of supplies open to him Bushuyev devised the following plan for feeding typhoid patients, which he has carried out for two years:

7 A.M. Tea with a roll.

8 A.M. 400 Cc. of soft (liquid) oatmeal, barley, or wheat porridge, with butter.

9 A.M. One or two boiled eggs, soft or hard, as the patient desires.

10 to 11 A.M. A glass (200 to 220 Cc.) of milk with a roll, one-half a cutlet, and a bit of boiled meat (160 to 168 grammes).

12 to 12.30 P.M. A plate (220 Cc.) of chicken soup or a bowl of ordinary soup, sometimes with a bit of chicken from the soup and a small cup of kisel (a sort of sour jelly); rarely, a little preserved fruit.

3 P.M. Tea with a roll.

6 P.M. A cup of chicken or beef soup; semolina pudding or milk; a bit of chicken.

8 P.M. Milk with a roll.

During the night coffee or tea with milk, two or four times; coffee with cognac.

For dinner and supper the white bread may be replaced with black (with the crust), and the soup by a thick wheat gruel. Many

patients prefer the boiled meat to cutlets, and the ordinary soldier's soup to hospital soup and gruel. The milk is generally boiled; occasionally it is given in the form of junket. As beverages, the patients were allowed cold water, boiled or unboiled, cranberry juice, milk of almonds, and small amounts of beer. The cranberry juice was particularly grateful to the patients. In addition, all patients received one to three ounces of wine in the morning, and every two hours sixteen cubic centimeters of Stokes' mixture.

Patients when quietly sleeping were not awakened either for food or medicine.

As a result of his experience the author says: "Not allowing myself to jump at rash conclusions, I will restrict myself to this alone, that the outcome and course of typhoid fever with a hospital diet as general as possible is not in the least worse than with a restricted diet."

During the year 1897, under this diet, the author lost 26 out of 318 patients, or 8.2 per cent.

During the ten years 1888 to 1897, the deaths from typhoid fever at the military hospital at Kiev varied between 10 and 19.3 per cent; the mean for the ten years was 12.4 per cent—358 deaths in 2887 patients. Thus, in 1897, with a mixed diet, the death-rate was materially less than for the ten years previously.

Under this regimen the general condition of patients is incomparably better than when kept upon an exclusively fluid diet. The common complaints are scarcely heard. At breakfast, dinner, and supper the patients are uncommonly wide-awake; even those who are very ill sit up in bed, beg for food, and eat with much satisfaction; only a few have to be fed by nurses. If one observes the patients at meal-times he wholly forgets that these individuals are seriously ill, with temperatures above 39° C. The military authorities are amazed on visiting a typhoid ward at the time of breakfast or dinner, "as they see almost no typhoids." The observation of the late Prof. M. T. Chudnovsky, that the typhoid state disappears under a full diet, is confirmed. This condition was seen chiefly in patients transferred from other wards, where they had been on exclusively liquid diet. During the first hours in the ward the patient lies in a motionless condition, failing to answer questions and refusing food. But if one succeed in some way or other in persuading him to eat a bit of meat, or cutlet, or an egg, he immediately begins to show some interest in the surroundings. In a few days, often within a day, there is no trace of the typhoid condition. Unfortunately, it is impossible to persuade all typhoid patients

to eat, at least what is at one's disposal in a military hospital. Attempts at forced feeding cause vomiting. Every care should be directed toward stimulating the patient's appetite and to avoid disgusting him by what is brought before him.

It is a different matter when the patient enters in an unconscious condition; then a liquid diet should be given — as much as he can take without vomiting. If it be impossible to feed him by the mouth, then he should be fed through the nose with a tube. The appetite lasts usually to the end of the illness; its diminution or disappearance is a grave sign.

The tongue and lips remain in a relatively good condition. There are no unpleasant gastric or intestinal symptoms. The bowels are often constipated; pea-soup evacuations are met with only in cases fed mainly on milk and bouillon.

Intestinal hemorrhage in feeding with a solid diet is not in the least more frequent than on an exclusively liquid diet. In the parallel investigation with Dr. Sartsievich, there was not a single case of intestinal hemorrhage among the author's patients. In 1897, among 318 patients, there were four instances of hemorrhage—that is, 1.7 per cent—while according to Homolle it occurs in 4.65 per cent; according to Barth, in 2 per cent; according to Griesinger, in 5.3 per cent; according to Murchison, in 3.77 per cent; according to Liebermeister, in 7.3 per cent; according to Stecher, in 10 per cent. Of his four patients with hemorrhage, two died; the other two recovered, notwithstanding the fact that in one of them the hemorrhage was abundant and protracted. It is interesting that of these four patients, only one received a solid diet; two entered in so serious a condition that they had to be subjected to forced feeding — *i.e.*, only a liquid diet; finally one, a military physician, was fed throughout the course of his febrile stage, which lasted six weeks, only upon bouillon, milk, coffee and tea with milk, because he feared solid food.

Perforation, in the last two years, has occurred only once in 509 patients—*i.e.*, in 0.19 per cent—while other authors estimate it from 1.25 to 3.04 per cent.

General peritonitis (non-perforative) was met with twice. One patient was admitted with a beginning peritonitis, but in the other it arose in the hospital. As in the case of perforation, so the peritonitis in the second case arose at a time when the patient was already being forcibly fed with liquids. Otitis media and parotitis were rare, and no bed-sores occurred.

The loss of weight was less than in patients fed on a more

restricted diet. The general condition was so good that the patients preferred, as a rule, to walk to their tubs and to the closet. "Long before the end of the fever they get out of bed, and there is much difficulty in making them lie down. In summer they go out into the garden almost upon the first day of the afebrile condition. The simple truth is that for the patient, as well as for the healthy man, that diet is best which pleases him most. It is not necessary to go to any trouble that the food may contain a certain quantity of albumin, of fat, and of carbohydrates, but that it shall be tastefully prepared and may excite the appetite. Every effort of the physician who has under his care severely ill patients should be directed toward the stimulating of the latter by the, so to speak, natural means, namely, food. In the absence of appetite one cannot hope for much success, even from forced feeding. But if one succeed in exciting the patient's desire for food, the privileges and advantages of a mixed, liberal diet become quickly evident. Whoever once attempts to feed his typhoid patients will never repent it, and will not meet with as many severe forms of typhoid as are observed under a restricted diet—for instance, the so-called hemorrhagic forms seen by Dr. Sartsievich in two patients."

While one cannot help feeling that this is the article of an enthusiast, yet both the reasoning and the figures are such as to make us reflect. Is it not more than likely that many cases of typhoid fever suffer from too restricted a diet? Bearing in mind the long course of fever through which the patient must pass, the dangers to which he is exposed, not only from exhaustion and the accidents peculiar to typhoid fever, but especially from the various secondary infections to which he is so easy a prey at the end of his long period of fever and fasting, our main object should be to keep up his general nourishment by every means in our power. Obviously, if a more liberal diet than that afforded by the purely liquid regimen could be assimilated, the patient's strength would hold out materially better. In diphtheria or pneumonia or febrile tuberculosis do we not make every effort to induce the invalid to take as much as he can bear of a simple, easily absorbable, and nourishing diet? And yet in typhoid fever we are restrained by a vague fear that any departure from the customary regimen is, for some reason or other, dangerous. What ground have we for this fear? The ordinary answer is the quotation of a case where, after a long course of fever, with a much restricted diet, some indiscretion has produced a sudden rise of temperature with alarming symptoms. An indiscretion in diet may produce such symptoms in any condition of

severe physical exhaustion, but the reviewer has never seen anything to suggest that this is more common in typhoid fever than in any other similar condition.

And those observers in recent years who have intelligently adapted the diet to the patient have only good reports to make. Such observations as those of Shattuck and Bushuyev are the best proofs that there is no special condition in typhoid fever which contraindicates liberal feeding.

Bearing in mind the frequency of intestinal lesions, we should of course avoid substances which leave an undue residue, but that the general course of the case would improve, that convalescence would be quicker, that lives would actually be saved, if, as Shattuck says, we paid more attention to our treatment of the patient than to that of the disease, as such, the writer is convinced.

The amount and nature of the nourishment given to each case must, of course, depend largely upon individual circumstances—the mental condition of the patient, the appetite, the character of the dejecta, the abdominal manifestations. Every care must be taken not to disgust the patient, and to avoid the development of unpleasant gastric or intestinal symptoms, for, as has already been said, our main object should be to keep up the strength; but in most instances there is probably no reason why the diet in typhoid should differ essentially from that in any similar infection. To quote from the excellent article of Dr. Shattuck:

"I would not be understood as advocating an indiscriminate diet. My plea is simply for treating the patient rather than the disease; for feeding him with reference to his digestive power, rather than solely or mainly with reference to his fever; for the view that the danger of accidents from the local intestinal ulceration is not increased by allowing him to partake of articles which leave no irritating residue, and which cautious trial shows are digested without disturbance or discomfort. At one end of the scale are the cases with such irritability or weakness of the stomach as to lead to the unfortunate term gastric fever, or those with pronounced diarrhea or indigested food in the stools; at the other end are those more numerous cases with clean tongue and a desire for food. Between the two is every gradation. The life of the former may depend on the skill and ingenuity of the doctor, assisted by the intelligent devotion of the nurse. The comfort and the duration of disability of all others may be materially modified for good by careful study and wise individualization of our cases. A long list of permissible articles from which selection can be made for different cases, and

for the same case at different times under varying circumstances, can be given. That which I append makes no claim to completeness, but is meant merely to be suggestive and illustrative:

"*Typhoid Diet.*—1. Milk, hot or cold, with or without salt, diluted with lime-water, soda-water, Apollinaris, Vichy; peptogenic and peptonized milk; cream and water (*i.e.*, less albumen), milk with white of egg, slip buttermilk, kumiss, matzoon, milk, whey, milk with tea, coffee, cocoa.

"2. Soups: beef, veal, chicken, tomato, potato, oyster, mutton, pea, bean, squash; carefully strained and thickened with rice (powdered), arrowroot, flour, milk or cream, egg, barley.

"3. Horlick's food, Mellin's food, malted milk, carnipeptone, bovinine, somatose.

"4. Beef juice.

"5. Gruels: strained corn-meal, crackers, flour, barley-water, toast-water, albumin-water, with lemon juice.

"6. Ice cream.

"7. Eggs, soft-boiled or raw, egg-nog.

"8. Finely minced lean meat, scraped beef, the soft part of raw oysters, soft crackers with milk or broth, soft puddings without raisins, soft toast without crust, blanc mange, wine jelly, apple sauce, and macaroni."

A Case of Status Epilepticus.—

William P. Spratling, superintendent of Craig Colony, in the *New York Medical Journal* of March 18, 1899, reports the case of a woman, aged 22 years, who developed epilepsy in infancy. Her attacks at first were of the *petit mal* type, but later changed to the *grand mal*. On admission to the colony it was noted that her intelligence was of a low order, due to the destructive influence of the seizures operating since infancy. The attacks occurred once a day on an average, but after some months' treatment they were reduced to one-half their former frequency, so that just prior to her death they averaged from fifteen to eighteen a month. Notwithstanding the severity and frequency of the seizures, she suffered no appreciable physical impairment, though it was noted that her mental faculties became progressively less acute.

She retired on the night of July 31, 1897, apparently as well as usual. At one o'clock the following morning she had three severe convulsions. Having learned to regard such isolated groups of seizures or serial attacks as frequently being the forerunner of status epilepticus, Spratling at once gave her a preparation usually efficient in checking such manifestations:

℞ Tinct. opii deod..... ♏ v.
Potass. bromide..... gr. xxx.
Chloral. hydrat..... gr. xx.
Liq. morph. (U. S.)..... ♏ jss.
To be given in a single dose.

She had no further seizures until 6.40 o'clock the same morning, a period of nearly six hours. At that hour they recurred, and by 8.20 she had had seventeen more. A dose of the above preparation was repeated, and again its action was good, checking the seizures until 4.25 o'clock of the same afternoon. At that hour they recurred, when, for the third time, the special preparation was again administered. This time it had no effect whatever, as will be noted by the following record of seizures that occurred between that hour and 6.45 P.M. the same day, a nurse in constant attendance making a note of each seizure, hour of occurrence, duration, and character: 4.25 P.M., 4.45 P.M., 4.50 P.M., 4.55 P.M., 5 P.M., 5.10 P.M., 5.20 P.M., 5.25 P.M., 5.30 P.M., 5.45 P.M., 5.50 P.M., 5.55 P.M., 6 P.M., 6.05 P.M., 6.15 P.M., 6.20 P.M., 6.25 P.M., 6.30 P.M., 6.45 P.M. Their order of origin and progression was fixed, as were the time periods that marked the intermission, the beginning, and ending of each convulsion.

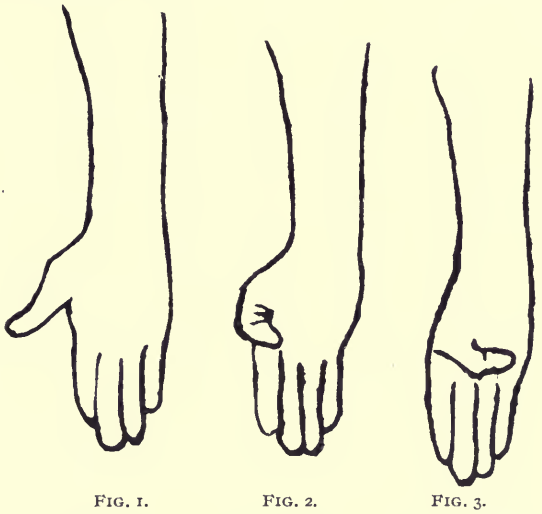

FIG. 1. FIG. 2. FIG. 3.

1. The first visible contraction was the bending of the first joint of the right thumb at a right angle to the thumb (Fig. 2). (Fig. 1 shows hand and thumb in normal position.)

2. The second step was the drawing of the bent thumb into the palm of the hand (Fig. 3).

3. The third step was the bending of the four fingers, held stiffly together, at the third joint, at right angles to the palm of the hand (Fig. 4).

4. The fourth step was the embedding of the ends of the four fingers in the palm of the hand over the contracted thumb (Fig. 5).

5. The fifth step was the bending of the now closed fist forward at right angles to the forearm (Fig. 6).

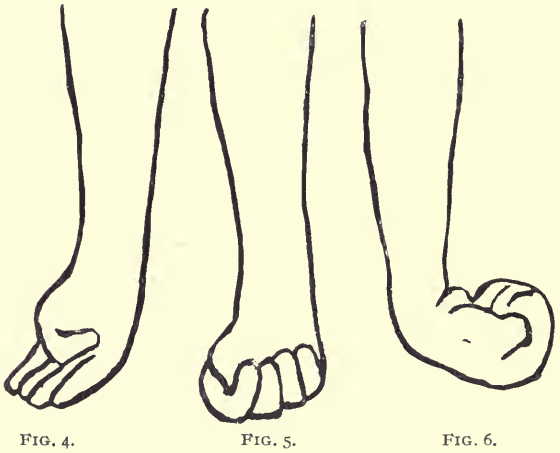

FIG. 4. FIG. 5. FIG. 6.

6. The sixth step was the bending of the hand and forearm upward in such a manner as to closely approximate the same to the upper arm.

Then the entire arm was drawn up and out at right angles to the body, the right side of the face contracted, and the head drawn to that side, while the right side of the body and the right leg were next involved.

As long as the patient was kept under profound chloroform narcosis, which was the case for nine consecutive hours out of the forty-nine the convulsions lasted, during which time she did not miss a seizure, the right side only participated in the convulsion; but when not under chloroform the contractions, after attacking the right side, as above described, then involved the entire left side in a quick general spasm. This particular order of origin and invasion occurred five hundred and nineteen separate and distinct times, not varying in any way whatever; the periods between the seizures were markedly uniform, the intervals never less than ten and never longer than fifteen minutes in duration.

In the further treatment of the case the above prescription was

repeated again at 5.20 P.M., with no effect. The lower bowel was then thoroughly cleaned by liberal douching, and the same medicine administered by enema, but without effect. Half a grain of morphine sulphate was then hypodermically administered, but at the end of two hours it had not lessened the force or frequency of the convulsions.

At nine o'clock it was decided to resort to chloroform, and she was kept profoundly under its influence for two hours, the only result being that during the condition of narcosis the contractions did not extend to the left side, so at 11 P.M. its use was abandoned.

There was not at any time any cessation of the fits. The patient remained unconscious between them until she had passed through about two hundred, and during the brief moments between seizures up to that time she was able to take small quantities of liquid nourishment.

In the meantime all known measures that might have some influence in checking the seizures were tried in succession, but none were effective. She had hot packs and cold packs; sedatives and motor paralyzants were administered by mouth, by enema, and under the skin; and chloroform and nitrite of amyl by inhalation. All known drugs and forms of treatment that offered the slightest hope of relief were tried and repeated many times, but with no effect. Just after the one hundredth seizure she was bled from the left arm, but it did no good.

After the two hundredth seizure it was decided to trephine. Just as arrangements were all completed her temperature began to rise and went by rapid strides up to 104°, 105°, 106°, and finally to 106.5° F. She became continuously unconscious, and was unable to take any nourishment; the entire body was bathed in profuse perspiration, so much so that it was necessary to change the sheets every two hours. Her face became blue, cyanotic; breathing labored, stertorous; hands and feet cold; and the force of the contractions themselves became progressively less severe. The decline in vitality was easily appreciated—that is, in the lessening violence of the contractions. After these conditions were established all treatment was abandoned, and forty-nine hours after beginning treatment the patient died.

Acute Tubercular Infection; Its Diagnosis from Pneumonia and Typhoid Fever.—

Under this title H. A. Hare contributes to the *Journal of the American Medical Association* of March 18, 1899, the history of a

girl aged ten years, who was taken ill with rigor and fever on November 10, having been well enough to be up and out-of-doors at dancing-school the day before. The fever speedily rose to points ranging from 100° to 105°, and remained so for the first few days, when it gradually became less marked. . It failed to respond to the use of cold spongings and the cold sheet as a rule, although at times this treatment reduced it considerably. There was but little cough, and at times none of it for two or three days; but the child was dyspneic, particularly at night, and cyanosis was marked. The pulse was usually as high as 120 to 130, and restlessness was constant. At times, particularly at night, there was delirium. An examination of her chest revealed at the right middle lobe the physical signs of consolidation—that is, bronchial breathing, dulness on percussion, and absence of vesicular sounds with exaggerated breathing elsewhere. At the left apex similar signs were present, and it was evident that the child had pneumonia. The facial expression, the somewhat dry lips and tongue, and the color of the patient's skin, combined with the fact that pneumonia often is due to infection by the bacillus of Eberth, made the physician who called him in consultation cautious as to the diagnosis of the case and the prognosis. The parents were told of the condition of the lung and of the suspicion that something other than a pure pneumonia infection was present, and the day of ordinary crisis was awaited with anxiety. On November 12 the temperature fell somewhat and seemed to give promise of relief, but the next day it maintained its course; the tongue was found to be more enteric in its appearance, and the rose rash of typhoid fever appeared on the chest and belly. Further careful palpation at this time showed a slightly enlarged spleen and liver—an alteration in those organs not previously found—and diarrhea, or rather looseness of the bowels, supplanted a tendency to constipation.

Under older ideas of those diseases it would have been thought that a primary croupous pneumonia had merged into a typhoid fever by a gradual process of developing asthenia; or again, that a double infection with the micrococcus lanceolatus and the bacillus of Eberth had taken place. While such a double infection is possible, a single typhoid fever infection may result in primary pulmonary symptoms. The second condition is not far removed from that just named; indeed, it may resemble both pneumonia and typhoid fever in one case.

That pulmonary tuberculosis may be quite as abrupt in its onset as ordinary cases of pneumonia is shown in one of the cases which

the author cites. That tuberculosis may be mistaken for typhoid fever was illustrated by a case which he saw in consultation, in which the physician stated that it was a prolonged case of enteric fever, having lasted four weeks, with no sign of approach to convalescence. A careful examination of the patient revealed the fact that instead of being the disease named it was one of general tuberculosis; the fever, diarrhea, wasting, and general asthenia being due to tubercular infection.

SURGERY.

Surgical Treatment of Exophthalmic Goitre.—

J. C. Da Costa, in *Progressive Medicine* for March, 1899, says the surgery of exophthalmic goitre, like the surgery of epilepsy, is in the experimental stage. Various operations have been devised, each founded on a different theory and each supported by amazingly gratifying statistics. Total extirpation is advocated by Doyen; Kümmell and many others perform partial thyroidectomy; Rydigier ligates the thyroid arteries; Kocher excises one lobe and one-half or two-thirds of the other lobe, and ligates three of the thyroid arteries; Jaboulay, of Lyons, believes in bilateral division of the cervical sympathetic; Jonnesco, of Bucharest, practices bilateral removal of the ganglia of the cervical sympathetic; Poncet does what he calls exothyropexy—that is, he makes an incision, exposes the thyroid gland, brings it into the wound, and sutures it so that it will be exposed, hoping thus to bring about atrophy. Some operators seek to cause atrophy by dividing the thyroid isthmus; some inject iodine; many will not operate unless suffocation is threatened, and then only perform tracheotomy.

The operations most worthy of consideration are those upon the cervical sympathetic and partial thyroidectomy. Operation on the sympathetic may consist of division of the cervical sympathetic or of excision of its ganglia. The advocates of such operations accept the views of Abadie as to the cause of Graves' disease, namely, that it is due to persistent irritation of the vasodilator fibers of the sympathetic and of their nuclei of origin, the goitre forming as a result of vascular engorgement of the thyroid.

Jaboulay tried extirpation of the gland, and was not satisfied with it. He recalled the fact that stimulation of the sympathetic will cause exophthalmus and cardiac palpitation, and he concluded that Graves' disease might be due to irritation of the sympathetic. He determined to divide the nerves and thus cut off the hypothet-

ical irritation. He claims that in nine cases the results were satisfactory.

Jonnesco, instead of simply dividing the nerves, resects on each side of the neck the sympathetic ganglia. He agrees with Starr that the mortality of thyroidectomy is over 17 per cent, and rejects it because of its higher mortality. After its performance there is a tendency to rapid death from heart failure. The reported successes of thyroidectomy have been largely in those cases in which the goitre long preceded the other symptoms—atypical cases of Graves' disease. He has twice performed bilateral resection, with two cures. The operation is not easy, but he considers it safe and satisfactory.

The real value of operations upon the sympathetic is not as yet determined, although the reported results are alluring. The operation is certainly not free from danger. In one of Faure's cases there was dangerous syncope during the operation. In another he had finished one side without alarming symptoms, and while operating on the other side the patient suddenly died from heart failure. Faure thinks that the operation can be rendered safer by using ether instead of chloroform, and by refusing to operate on both sides at one sitting.

There can be no doubt that the anesthetic is a great danger in all goitre operations, and it would be well to take Kocher's advice and employ local anesthesia. Chipault says that in seventy-one operations upon the sympathetics, there was not a death nor a serious complication.

The theory upon which this operation is founded has been abandoned by neurologists. It was argued by Abadie and others that characteristic changes exist and can be demonstrated in the sympathetic ganglia, but identical changes have been clearly found in cases where Graves' disease did not exist.

In estimating the value of the operation we must take into account the effect of the operation *per se*, for exophthalmic goitre may pass away after one of several operations, after shock, after prolonged rest in bed, after medical treatment, or spontaneously. It is a disease which is associated with marked emotionalism and often with actual hysteria, and Jaboulay himself advises against operation if there is marked hysteria. It has been pointed out by Doyen that the disease may be apparently cured by the operation and yet recur later.

Combemale and Gaudier recently reported a case to the Paris Academy of Medicine, in which resection of the sympathetic was followed by great improvement of most of the symptoms, though

the goitre did not diminish in size. The authors think the operation should be done when tachycardia is very marked and persistent and when it is associated with exophthalmus alone.

It is perfectly just to say that the value of the operation has not been proved; that it may prove fatal; that it may fail; that it should not be employed if the goitre is large; but it is proper to try it if the goitre is not very large and does not yield to rest and medical treatment, and the patient refuses thyroidectomy.

Treatment of Colles' Fracture.—

W. S. Caldwell, writing in the *Railway Surgeon* of March 21, 1899, of the treatment of fractures without immobilization, says the *bête noire* of surgeons, Colles' fracture, should never be put in any kind of an immobilizing apparatus.

The majority of patients are women past middle life; their muscles have already undergone a condition of partial senile atrophy, and all that is necessary is to bind these muscles down tight to the osseous structure by putting on splints and bandages. In a few weeks the muscles have lost their integrity to an extent that hinders for all future time their perfect function. He has seen dozens of these fractures treated by M. Championnere with results superior to what he has been able to achieve with the numerous fixation splints. His treatment is to apply a common roller bandage to the arm just above the wrist-joint, and have the patient visit him at least once in twenty-four hours, he spending ten minutes in intelligent massage of all the parts from the finger-tips to the elbow-joint. If there be a great deal of contusion about the wrist-joint in connection with this fracture, he does not commence the active movements of the parts for the first three or four days, but after that period moves the joints freely without giving the patient the least discomfort. He does not claim that it is always possible to treat Colles' fracture without there being a slight deformity, but claims that such deformity is less in the manner of treatment spoken of above than it is in a fixation apparatus, and that the functions of the joint can be reestablished perfectly or nearly so in every case, a result that he is very certain does not always follow when immobilizing splints are used in the treatment.

The Roentgen Ray in Military Surgery.—

Wm. M. Gray, the microscopist of the Medical Museum in Washington, who was detailed to the hospital ship *Relief*, is credited by the *New York Sun* with the following statement:

"One thing this war has taught is that the *probe in all its forms has gone out of use*. No more searching blindly in a man's body for the bullet; no more danger of blood poisoning from the introduction into the wound of instruments of search. The fluoroscope tells us instantly where the projectile has embedded itself, and we have only to cut it out as if it were there before our eyes. The ingenious electric probe and all similar devices have seen their day. In all future battles experts in skiagraphy will be attached of necessity to the medical corps, and the work of the surgeons will be materially assisted by their precise indications. We took out bullets by the pint on board the *Relief*, and almost without exception they were located by the *x*-rays."

As to the time consumed in photographing the patients and in developing the *x*-ray plates, Dr. Gray stated that the whole operation consumed but a few minutes. It took ordinarily not over five seconds for a wound in the hand and thirty seconds for one in the foot. He further mentioned a case where a man was wounded in the right shoulder by a Mauser bullet which plowed its way on around the chest walls under the deep muscles and finally lodged in the left arm, shattering the humerus. He said: "Here was an odd condition; a wound in the right shoulder, but no bullet; the bone of the left arm broken, but no wound. How long do you think it would have taken to find that bullet by probing? It did not take us one minute to find it with the *x*-rays."

Early Diagnosis of Urethral Stricture.—

J. Henry Dowd in the *Philadelphia Medical Journal* of March 11, 1899, says that if contraction can be detected early, before the deeper tissues become involved, there is hope of early and complete cure. To successfully meet the early indications of stricture it is necessary to abandon the symptoms as described in the books, as these relate to strictures that are at least from three to seven years old. He claims that the earliest diagnostic symptom of urethral contraction is the appearance of shreds in a clear, or semiclear, urine. At first these shreds are almost imperceptible, but their presence is quite constant from the time of submucous involvement, and as the canal becomes smaller the shreds increase in size. He especially argues that no case of gonorrhea should be discharged as cured until the morning urine is clear of débris, and he recommends that the patient should be kept under observation for at least six months, that urinal shreds may be detected early should they appear. In conclusion he says:

1. Text-book symptoms of stricture are misleading and do not occur until the contraction has existed for years.

2. Symptoms or no symptoms, shreds in a clear or semiclear urine indicate urethral contraction.

3. The early discovery (three or four months from time of infection) of these shreds may be followed by the entire obliteration of their cause.

4. Always give the patient the sensation of urination when using a sound.

5. Formaldehyde irrigation preceding and zinc solution following a sound is advisable in every case, and may sometimes save a life.

The Cauterization of a Wound Inflicted by a Mad Dog.—

The value of cauterization of wounds inflicted by rabid dogs has been studied experimentally by Follen Cabot in the *Medical News* of March 18, 1899. Sixty guinea-pigs were inoculated in the thigh near the sciatic nerve, and after twenty-four hours the wound was opened and thoroughly cauterized with fuming nitric acid. Of these 91 per cent recovered, and of the twenty-six controls, 95 per cent died. Similar series of experiments were made with the actual cautery; 70 per cent of the cauterized animals recovered, and 89 per cent of the non-cauterized animals died. A third group was cauterized with pure silver nitrate, under the same conditions, with 55 per cent of recoveries, and 84 per cent of deaths in those not cauterized. Finally the wounds were simply opened and swabbed out with absorbent cotton, with 31 per cent of recoveries in those thus treated, and 84 per cent of deaths in control animals. He concludes that fuming nitric acid is the most effectual substance for cauterization, and that it is of great value if employed within the first twenty-four hours.

[The value of these experiments cannot be overestimated, as there has been a growing feeling that cauterization was of no value unless done within a few minutes. The actual cautery is nearly as efficient as nitric acid, and it has the great merit of availability; there is no reason why it should not be used at once in suspected cases. A nail, wire, or other metal object can always be obtained, and raised to a red heat.]

Thyro-Iodine in Delayed Union of Fracture.—

At a late meeting of the Society of Surgery of Paris, M. Quenu read a paper on the use of thyro-iodine in delayed union of fractures. We have referred in these columns to the use of this substance as a

substitute for thyroid extract. It is claimed that thyro-iodine has the essential stimulating substance found in thyroid extract, but that it is free from certain substances which disturb the circulation and heart's action. The first of M. Quenu's cases was that of a young woman, 24 years of age, with a compound fracture of the lower third of the femur. Suppuration occurred and a false joint formed. Three days after beginning the use of thyro-iodine the patient was able to walk supported by a splint, and shortly thereafter the consolidation was practically complete. A second case was that of a patient with delayed union who had no thyroid gland, who had been suffering from postoperative myxedema following thyroidectomy.

At the same meeting M. Reclus described a patient who had sustained a fracture of the thigh. The consolidation was very slow, and in addition an enormous callus formed. Thyro-iodine was used, which was followed by rapid disappearance of the callus and firm union. Reclus spoke of two other cases in which the same treatment had been employed without result.

Hemostasis in Laparotomy.—

A. G. C. Skene, in the *American Gynecological and Obstetrical Journal* for March, 1899, writes on myomectomy by a new method. The essential feature consists of the manner in which hemorrhage is controlled by means of a hemostatic forceps in which an electric current is employed to mummify the tissues. It is the same method which we have elsewhere referred to as used in treating the umbilical cord. The advantage claimed for this method is that it leaves the stump or pedicle in its normal relations, and that there is absolute security against hemorrhage; at the same time no irritating foreign body is left within the abdomen.

One objection to the method is that a somewhat cumbersome electric battery is required, which will perhaps prevent the extended application of the method in private practice, but will be no objection in hospital work.

Washing-soda for the Preservation of Surgical Needles.—

At a recent meeting of the New York Surgical Society, Dr. Dawbarn (*Annals of Surgery*, February, 1899) recommended the use of a saturated solution of washing-soda in water for the purpose of preserving surgical needles. He stated that this method of keeping the needles and cutting instruments untarnished was superior to any other which had thus far come within his experience. He

showed needles kept bright in this way for a year and more. Most of the other methods are open to some objection. As to keeping them in carbolized oil, this to some extent dulls the points of the needles. Lysol being a dark solution, the needles are not easily seen in it; calcium chloride in a closed place to keep the air dry, with the needles lying on a dish near it, produces a curious tarnish almost like rust; in Fuller's earth or other powders it is difficult to find the smaller needles. A solution of borax in water, as recommended by M. Marechal, will also rust the needles as soon as the thin plating which all needles have is worn away. Albolene is a good preservative, its only objection being the unpleasant oiliness. Calcium chloride in absolute alcohol is effective, but comparatively expensive. Washing-soda dissolved in water to saturation is cheap and effective.

Formalin in the Treatment of Inoperable Malignant Growths.—

William Mitchell, in the *British Medical Journal* of February 11, 1899, describes a sarcoma of the cheek about four inches in diameter, which presented a denuded bleeding surface. It was treated with a 20-per-cent solution of formic aldehyde. After the application the tumor was covered by a sheet of gutta-percha to prevent evaporation. The bleeding immediately ceased, and there was a hardening and necrosis of tissue extending about a fourth of an inch into the tumor. The remedy was again applied and the curetting repeated until the tumor was entirely removed. The unfavorable features of the treatment were considerable pain and some edema of the surrounding tissue.

THERAPEUTICS.

Hydrotherapeutics.—

James J. Putnam, in the *Boston Medical and Surgical Journal* of March 9, 1899, closes some excellent remarks on the value of hydrotherapeutics with a few points upon which he thinks physicians hold fallacious opinions:

1. Is a "shock," as from sudden application of cold water, useful or objectionable? The latter view is often maintained, both by patients and physicians, but the former is correct, provided only that the shock is proportioned to the habits and the capacity for reaction. Patients are apt to dislike the "shock" of cold water, and if they are feeble or nervous it may, if severe, frighten or fatigue them. For this reason, when an unfamiliar method is first

used the application should be as warm as 85° to 90°. This will feel cold if the skin has previously been warmed to 100° or higher. On the other hand, the common practice of letting cold water run gradually into a previously hot bath, so that the temperature is slowly lowered and "shock" avoided, is an objectionable one, and much less likely to be followed by a good reaction than a sudden change, especially if the latter is associated with smart friction, as in the case of the drip-sheet or forcible cold affusion given by another person. It is not easy for a patient to make a thoroughly satisfactory cold application unaided, except by an immersion bath, since otherwise, at the best, only half the body can be bathed and rubbed at one time. The immersion bath, at low enough temperature to be thoroughly stimulating, is very refreshing to vigorous persons who are thoroughly habituated to it, but less safe for feeble persons. If the latter must take their bath unaided, rubbing with a large, dripping-wet towel is perhaps the best method.

Hot baths, at temperatures considerably above that of the body, have primary effects similar to those exerted by cold baths, but secondary reactions are liable to occur, leaving the skin pale and cool and the arterial tone low; and, moreover, the skin is for a long time afterward abnormally sensitive to slight cold. It is risky on these accounts to take hot baths at bedtime, because the primary heat of the skin leads the patient to underestimate the amount of clothing which will be required later, and he may wake to find himself chilled. These dangers are diminished if sufficient time is taken to allow of complete cooling before going to bed, or if the hot bath is followed with a dashing or rubbing of cold water. Of course there are cases where the sedative action of a prolonged warm bath is very useful. Massage given during warm baths is useful for elderly people with arteriosclerosis (Jacobi).

3. It is a mistake to suppose that shivering is necessarily a sign that the body is becoming chilled to an objectionable degree. Shivering frequently occurs when one arises from bed on a cold morning, yet wholly disappears with the feeling of coldness that accompanies it after a plunge into very cold water. Even blueness of the finger-tips is not necessarily a danger-sign, since it is usually due to local changes in the cutaneous circulation, and not to weakness of the heart.

4. Children do not require as low temperature as adults to develop such a degree of reaction as can be expected from them, and do not stand severe cold as well.

5. Where the reaction on the part of the vasomotor system is to

be limited to a small portion of the body, lower temperatures and more prolonged applications can be used than where the whole surface of the body is to be exposed.

6. Where drip-sheets or sheet-baths or wet packs are to be used, coarse linen sheets or damask table-cloths are better than cotton sheets, as being more absorbent and affording better surfaces for friction.

7. The mechanical impact of a stream of water delivered under high pressure in the form of a douche adds greatly to the stimulant effect and insures a better reaction. Nevertheless, a feeble patient has to be accustomed gradually to high pressure as to low temperatures, and at first relatively short applications are necessary. In a well-appointed institution greater and readier variability, and thus better results, can be obtained than in a private house.

8. Especial caution is necessary in applying baths tending to produce much reaction to elderly persons, or to any person with brittle arteries or with disease of the heart.

Jequirity in the Treatment of Granular Conjunctivitis.—

Seventeen years have passed since De Wecker published his results in the treatment of granular conjunctivitis and pannus with this drug. William M. Sweet, in the *Therapeutic Gazette* of March 15, 1899, claims that in the earlier use of the drug solutions of too great strength were employed and insufficient time elapsed between the applications. He has recently had under his care a case in which the usual remedies had little effect. It had been operated upon, twice by scarification and once by rolling, without much benefit. An annoying complication was occasional acute attacks. An infusion of jequirity, two grains to an ounce of water, was applied to the everted lid with a cotton swab every third day; the strength of the solution was increased one grain each time. At the end of two weeks there was marked improvement in the pannus, which disappeared at the end of three months, together with the granulations. At no time was there severe inflammatory reaction, and the secretions were not profuse nor membranous in character. The strongest solution used was about twelve grains of the powdered seeds to an ounce of water. The favorable results reached in this case led to its employment in twenty-five other cases, the results being favorable in all except one. The reaction following treatment in this case was not marked.

In one of these cases there existed at the time treatment was begun considerable conjunctival secretion and several shallow corneal

ulcers. The weak solution seemed to aggravate the secretions, and it was at once stopped.

One of the patients had a trachomatous pannus with great impairment of vision. Two months' treatment with jequirity cleared the cornea so that he was able to read large print.

In preparing the infusion cold water is placed upon the powdered seeds in a loosely corked bottle, and after macerating for twenty-four hours is filtered and used. The infusion should be made fresh every time it is used, as it soon decomposes and becomes inert. De Wecker states that the infusion may be made with cold water three hours before use, and that the strength is as great as when macerated twenty-four hours. The first application is from two to four grains to the ounce, a cotton mop soaked in the infusion being freely passed over the everted lids. The application is repeated every second or third day, being increased in strength one grain of the powder each time. As soon as a slight discharge appears the treatment is discontinued for about four days, and is then begun again with the next stronger infusion. In some cases an infusion of twenty grains to the ounce has in this way been employed without causing any severe inflammatory symptoms.

The author believes the remedy is one of the most valuable we have in trachoma associated with pannus, but it is not indicated in acute cases nor in those in which there is much secretion.

Prophylaxis of Ophthalmia Neonatorum.—

P. C. Jameson, in the *Medical Record* of March 4, 1899, closes an article upon this subject, as follows:

1. The absence of external evidence of specific discharge from the birth canal cannot be relied upon as an indication that specific infection does not exist, as infection may be present without external evidence.

2. Reliance upon the condition of the infant's eyes as indicative of a coming attack of gonorrheal conjunctivitis, and consequent postponement of treatment until symptoms appear, are deceptive. In the period of incubation the gonococcus may be dormant, clinical symptoms may be masked, and the disease itself may be abrupt.

3. The objections to nitrate of silver as a prophylactic and remedial agent are not clinically sustained; on the contrary, it possesses ideal properties for counteracting this disease.

4. The discrimination between private and hospital patients in the practice of prophylaxis is thoroughly inconsistent, as the disease is common to both classes.

5. The comparatively small number of cases seen in individual practice, and the subsequent successful treatment of them, cannot be regarded as a contraindication to the general adoption of careful prophylaxis, as the aggregate number of cases of total and partial blindness resulting from this disease is large.

What is the best procedure in the practice of prophylaxis of ophthalmia neonatorum? In the writer's opinion it can be divided into three stages—before birth, at the time of birth, after birth.

Before birth means should, of course, be employed to render the sterilization of the birth canal as complete as possible. At the time of birth the infant's eyes should be carefully cleansed with a solution of twenty grains of boracic acid to the ounce, care being taken to render sterile the surrounding portions of the orbit, and also to make use of Crédé's method, viz., the instillation of one drop of a solution of nitrate of silver, ten grains to the ounce, between the lids and upon the cornea. After birth some mild cleansing wash should be used, preferably boracic acid, in solution of twenty grains to the ounce, three or four times daily, this to be practiced for five to six days after birth.

Treatment of Seasickness.—

This disorder does not receive the special attention which it deserves. In the majority of cases the sufferers from *mal de mer* serve as the butt of more or less excellent wit on shipboard, and on land they serve as an endless subject of cartoons and jokes in comic papers. If seasickness were always a malady comparatively slight in its effects, it would be hardly worth while considering it seriously. Unfortunately, in some cases, this disorder is a most distressing one, and when complicated by other conditions may jeopardize the life of the patient. P. K. Taylor, in a letter to the *Journal of the American Medical Association* of March 25, 1899, says that we should rely chiefly, in nervous cases, on morphine and atropine, given by preference hypodermically, and on calomel and Rochelle salts for disturbed digestion. Cocaine will sometimes overcome nausea if given by the mouth, and caffeine may be given for the headache. He especially warns that the bromides be avoided, as they do more harm than good. In this latter statement we think he is in the main correct, but it is to be remembered that some patients tolerate the bromides better than others, and in these they may be of distinct value. Of especial importance do we regard his recommendation that the breathing be regular and not in rhythm with the motion of the vessel. He has noted that when a ship is pitching

that persons instinctively hold their breath as the vessel sinks into the hollow of the sea. This leads to clonic muscular contractions of the diaphragm, which if not speedily checked will lead to emesis. (A popular remedy for seasickness, a band drawn tightly around the abdomen, doubtless finds its explanation in the support which it gives the diaphragm.)

Regarding diet the author says: "It is best to let patients choose for themselves to a great extent; what will do admirably for one is just what another cannot tolerate. Liquids should be restricted in amount. Solids, like toast, or dry unsweetened biscuits with a little iced champagne, or brandy and ginger ale, are less likely to be rejected by the stomach than are the usually administered beef tea and chicken broth. Do not insist too much on the value of fresh air on the deck. A day or two in bed with restricted diet is sometimes of more benefit than fresh air secured at the expense of one's reserve fund of energy."

Treatment of Acute Coryza.—

In the vast majority of cases those conditions which in the vernacular pass as a cold receive no local treatment. A cold in the head is, we think, usually met by the exhibition of a few grains of quinine combined with one of the coal-tar derivatives. Many of the older practitioners still cling to the favorite of a quarter of a century ago, namely, Dover's powder, which is often advantageously accompanied by a dose of calomel. It is exceptional that the nasal cavities receive any special treatment, as it is believed that the local conditions will clear up in a few days after the "cold" has disappeared. Perhaps it is still uncertain as to whether the constitutional symptoms of cold in the head are due to the local changes which are taking place in the mucous membrane of the nose, or whether the disordered condition of the general system leads to a local inflammation. Whichever view may be adopted, there is no question but the patient derives considerable benefit from local treatment directed to the condition of the nose. Breathing is embarrassed by the swollen condition of the mucous membrane, and there is either a profuse watery discharge, or thick, tenacious mucus, more or less purulent. These conditions are deserving of treatment, and we feel sure that the treatment of the nose is of primary importance in the management of a cold in the head.

In so trivial an affection it will be impossible to have a patient come to the office as frequently as is necessary to secure proper cleansing of the nose. This can be accomplished by the patient,

either using a spray from a hand atomizer, or a wash of Seiler's solution, which will cleanse the mucous membrane; this should be followed by the following combination, recommended by Theisen in the *Medical Summary* for January, 1899:

Soda bicarb	15 grains.
Soda biborat	15 grains.
Amyli	5 grains.
Acacia	1 drachm.
Nosophen	1 ounce.

M. S.: As a snuff.

Nosophen and Antinosin as a Substitute for Iodoform.—

J. S. Perekhan, in the *Chicago Medical Recorder* for March, 1899, has used these drugs in over one hundred cases in private practice in which results were carefully watched. He considers nosophen to be the best of the new antiseptic iodine compounds, equal to iodoform and without the latter's disagreeable odor and irritating and poisonous effects. He regards nosophen as superior to all other iodoform substitutes in the market. Nosophen is a light, impalpable, yellowish-gray powder, containing 61.7 per cent of iodine in combination. It may be heated to 220° C. without decomposition. It is insoluble in water and acids, soluble with difficulty in alcohol, ether, and chloroform, but is readily dissolved in alkaline solutions.

Antinosin is a dark blue powder, readily soluble in water and alcohol, and was used where solutions were required. In most of the cases treated nosophen was used as a dusting powder, but it was sometimes used as an emulsion and sometimes mixed with collodion.

In conclusion the author says: "As an antiseptic iodine compound, nosophen is a valuable preparation and is a good substitute for iodoform as a bactericide. It is hemostatic, sedative, and antiseptic; it hinders germ development, diminishes suppuration, and promotes healthy granulations. It has desiccative and cicatrizing action, superior to iodoform. Practitioners who have failed to discover an efficient substitute for iodoform will find in nosophen, after giving it a thorough and careful trial, an excellent odorless, tasteless, and non-toxic antiseptic."

A New Coffee.—

The *Medical Times* for March, 1899, in an editorial calls attention to the striking similarity of the active principles of tea and coffee. It has been generally supposed the narcotic principle of coffee, which at times produces toxic action, is caffeine, and that the stimulating effect of the beverage is owing to the one or 1.5 per cent

of that alkaloid which it contains; but recent scientific investigations show that this is true only in part, as much of its beneficent action can be traced to the aromatic substance contained in the bean developed in roasting, giving the delicious aroma, in which caffeine has no part.

A variety of coffee grows wild in the island of Bourbon, bearing the name of caffé marron, which, while it contains no caffeine, still has, to a certain extent, the odor and the stimulating effect of the coffee of commerce. This coffee lacks much of the delicate and fragrant aroma of the best grades of coffee, but it must be remembered that the shrubs grow wild and have never had that cultivation so essential in developing the highest qualities of any product. In time, under proper cultivation, this, to us new, product may and probably will have the delicate flavor and much of the stimulating properties of our best grades of coffee, without any of their deleterious effects.

Aqueous Extract of the Suprarenal of the Sheep in the Nose and Throat.—

Sporadic reports of cases tend to confirm the conclusions of Swain, published in the *New York Medical Journal* of December 24, 1898, in which he maintained that the aqueous extract of suprarenal glands was a powerful local vasoconstrictor agent and a contractor of erectile tissue, which it is safe to use in very considerable amounts. It is free from dangerous or deleterious effects locally, or to the general constitution of the individual.

Local effects can be reproduced in the same individual apparently any number of times, without entailing any vicious habit either to the tissue or to the individual. The use of the extract seems to aid drugs which may be locally used after it. In acute congestions it has its widest application and greatest opportunity for good, but also in certain chronic conditions of hay-fever type, where edematous tissue seems prone to develop, it can be relied upon as one of the most helpful adjuvants. The only difficulty seems to be in producing it in quantities and in preventing decomposition on standing, which objection will probably be overcome by laboratory experiments.

Benzosol in the Treatment of Pulmonary Tuberculosis.—

Julius L. Salinger reports in the *Therapeutic Gazette* of March 15, 1899, the results obtained in the Jefferson Medical College Hospital out-patient department in the treatment of chronic pulmonary

tuberculosis with this drug. Creosote has been of late substituted by benzosol, as the latter is free from the unpleasant taste and smell which is characteristic of creosote. The substitute has been found of special value in cases complicated by anorexia, nausea, and other gastric disturbances. The drug is commonly given in five-grain doses, sometimes increased to ten, three times a day, in the form of a powder or compressed pill.

Benzosol is a colorless crystalline powder with a slightly pungent taste, not soluble in water, and contains 54 per cent of guaiacol. It is unaltered by the secretions of the stomach, but is broken up into guaiacol and benzoic acid when it reaches the intestines. The digestion is not affected by it, and it is odorless and tasteless. A table of twenty-four cases is given in which the drug was employed, and most of them show improvement. The class of cases most benefited were those with marked gastrointestinal symptoms. The exhaustive diarrhea of phthisis was in most cases promptly relieved.

Heroin as an Analgesic and Sedative.—

Franz Tauszk, in the *Orvosi Hetilap*, 1898, No. 50 (*Wiener Klinische Rundschau*, Feb. 26, 1899), has found this a valuable remedy in the treatment of phthisis, pneumonia, pleurisy, bronchitis, and bronchial asthma. In sixteen cases in which it was used it was found without exception to have a distinctly sedative action, relieving the distressing cough and pain. In one case of phthisis, in which morphine failed to give relief to a severe and distressing cough, immediate relief was obtained from a moderate dose of heroin. In but one case has the writer noted unpleasant symptoms, and this was where the patient had taken the remedy for a considerable time. He has noted that the prolonged use of the drug gives more or less toleration, but this can be met by a very slight increase in the dose. The drug is usually employed in from one- to four-grain doses rubbed up with sugar of milk or bicarbonate of soda, in wafers, before meals.

Camphoric Acid for Night Sweats.—

H. R. Coston (*Therapeutic Gazette*, March 15, 1899) has obtained better results from the use of this remedy than from any other which he has employed. He reports three cases—one of chronic pulmonary tuberculosis, one of convalescence from acute rheumatism, and the other acute pulmonary phthisis—in which night sweats were a prominent and debilitating symptom. The three cases were immediately relieved by the remedy; in one the symptom did not return

after the administration of a single dose, and in the second case there was relief for a week. In each of these cases the remedy was administered in three-grain doses. He has found it to be of value in the defervescence of typhoid fever in which profuse perspiration occurred. The effect of the remedy usually lasts for some days, and it should be administered about an hour before the sweating is expected. It is best given dry on the tongue, washed down with water.

Treatment of Nosebleed.—

Boyd Cornick, in the *Journal of the American Medical Association* of March 25, 1899, recommends that we treat this condition with a dry plug of sponge, about an inch and a half in length and a half-inch in diameter. The sponge should be carefully cleansed in boiled water, freed from gritty particles, and dried. When needed it is inserted its full length along the floor of the bleeding nostril. No styptic is necessary. The pressure of the expanded soft sponge against the bleeding part immediately checks the flow of blood. It should be removed in about twelve hours.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Puerperal Eclampsia.—

Robert W. Stewart, in the *Cincinnati Lancet-Clinic* of March 25, 1899, reports an interesting case and the results of a series of experiments. The patient, a white woman aged 24, in whom physique, habits, and general health were good, became pregnant for the first time in September, 1895. The urine was examined several times, showing nothing uncommon except that it was abundant in quantity. On May 20, 1896, there was frontal headache and nausea. May 22 the patient was in a stupor, from which she could be aroused. Her head was thrown toward right shoulder, eyes turned toward the left and upward, skin and conjunctiva of a dusky yellow color. She was then suffering from a second clonic convulsion, the first having occurred an hour before.

There had been free evacuation of bowels and large quantities of urine the day before, but more or less headache and nausea (without vomiting); sleep broken during night. A third convulsion settled the diagnosis. One-half grain of morphine sulphate hypodermically stopped the convulsions, and patient became quiet. No fetal heart sounds or movements were revealed by careful examination. Urine

muddy; specific gravity 1020; acid; solid with albumin; some granular and hyaline casts and epithelial cells.

Patient soon became restless after administration of the morphine, and complete anesthesia was obtained by chloroform; the cervix was dilated by the finger and membranes were ruptured.

There were no more convulsions, but patient complained and muttered in a low delirious way. There was no change and not the slightest evidence of approaching labor, nor clearing up of mental condition.

At 8 P.M., manual dilatation of the cervix, and ordinary forceps delivery with some difficulty, but no laceration. Child dead. Some swelling with pitting about patient's ankle; not noticed before attack, but undoubtedly present.

Seven or eight months of perfect health followed, when she again became pregnant. From time of quickening examinations of urine were made monthly; tests showed nothing abnormal for four months. The fifth month examination was as follows: Day urine, specific gravity 1041; excess of phosphates; urea, 8½ grains to 1 ounce. Night urine, specific gravity 1023; excess of phosphates; urea, 6¾ grains to 1 ounce. This urine was collected in jars containing one drachm of boric acid to the pint and used in experiments upon rabbits, because of the diminished percentage of urea.

The animal upon which the day urine was tested lived thirty hours, and the one injected with the night urine died within eight or ten hours; no convulsive movements in either rabbit. This absence of convulsive action in both specimens roused a suspicion of defective elimination. Five grains of calomel and two drachms of powdered jalap were given in broken doses, followed by a half-drachm each of sodium phosphate and sodium sulphate in seltzer water, three times daily. Patient was limited to milk diet, kept quiet, and the symptoms disappeared. The urine remained normal until shortly before her confinement, but her general condition continued so good that only sodium phosphate was given, and she was delivered of a healthy child. The recovery was uneventful.

Owing to the uncertain results obtained by different authorities, Dr. Stewart began a series of experiments with the urine of the last month of pregnancy. The urine from different patients was passed directly into quart Mason jars containing two drachms of Morsen's boric acid; then concentrated to one-half to one-third bulk, neutralized with sodium bicarbonate, filtered, and injected warm into the abdomens of rabbits, with proper aseptic precautions. The injecting needle was directed toward the lower extremities to avoid injury to vital organs.

Experiment 1.—Urine unconcentrated, unchanged; 110 cubic centimeters killed rabbit weighing 4½ pounds in two hours and thirty-nine minutes; severe convulsions similar to strychnine poisoning or eclampsia.

Experiment 3.—Urine of primipara, specific gravity 1020; boiled down one-half, neutralized, and filtered. One-pound rabbit injected with 25 cubic centimeters. Died in the last of three convulsions after a lapse of seven minutes. Convulsions marked by opisthotonos, stretching of extremities, and emission of dark fluid per rectum.

Experiment 4.—Animal same weight and urine same as Experiment 3; 20 cubic centimeters injected; had thirteen convulsions, alternating between clonic and tonic, in forty minutes, and died.

Experiment 5.—Same weight animal and urine same as Experiments 3 and 4; 8 cubic centimeters injected. Fully recovered in thirty hours; symptoms during first few hours much modified, but similar to those of the other two.

Experiment 6.—Urine of consumptive multipara who passed but one pint in twenty-four hours; specific gravity 1028; no sugar; no albumin. One-pound rabbit injected with 8 cubic centimeters; died in six minutes. Symptoms: crouching attitude, paralysis of extremities, jerky movements, peculiar convulsion.

Experiment 7.—Urine of healthy, well-developed primipara; specific gravity 1015; no albumin or sugar. Boiled down to one-third bulk, neutralized, filtered, warmed, and 50 cubic centimeters injected into rabbit weighing about five pounds within fifteen minutes. Symptoms very similar to those of Experiment 3, dying in violent convulsion after thirty minutes.

The reasoning deducted from this series of experiments is that if 110 cubic centimeters would kill an animal weighing 4½ pounds, and the woman from whom the urine was taken passed 1500 cubic centimeters in twenty-four hours, enough poison to cause her death would generate in her system in forty-eight hours, providing she were as susceptible to the poison as the animal tested.

The conclusions reached from the case are as follows:

1. Poison constantly circulating in the blood and being thrown out by the kidneys.

2. Disposition on the part of the kidneys to albuminuria and nephritis when pregnancy exists.

3. When poison is in excess there is a disposition to disease of the liver and other organs.

4. Hence diminished elimination and consequent disposition to retention of poisonous materials in the blood.

5. Consequent tendency toward eclampsia.

If the premises already stated are correct, the treatment must have for its main object free elimination, with the hope of thus freeing the system of the poisonous substances. Naturally, therefore, it is divided into prophylactic and that of the emergency or attack.

In the pregnant woman the prophylactic treatment is of particular importance, because experience teaches that in all cases, except those in which chronic nephritis exists, free elimination prevents the eclamptic attacks. Although it has not been demonstrated, there is strong presumptive evidence that the poison is essentially a product of imperfect digestion. For this reason it is of importance to keep the emunctories in order, but it is of especial importance to regulate the amount of meats because of the presence therein of the xanthin bodies, which are especially toxic in character. Aside from the statement of this fact, it hardly seems necessary to dwell upon the methods of assisting elimination. One is warranted in again calling attention to the value of estimating the quantity of urea antepartum and taking active measures to increase elimination when the percentage falls below normal, say twelve grains to the ounce.

The treatment of the attack has been limited to the therapeutic and surgical, the former including morphine, chloral hydrate, veratrum viride, chloroform inhalations, etc., and the latter including forcible dilatation of the cervix, version, lateral incisions of cervix, and forceps. Both sides have strong and earnest advocates, and the fight has been a bitter one, especially between the two leaders, Dührssen and Charpentier. A careful review of the controversy shows that the real question at issue is whether the patient shall be delivered at once upon the occurrence of eclampsia, no matter what the stage of pregnancy may be, or shall we try the therapeutic method first and resort to the surgical only when the first mentioned has failed.

Perhaps Veit's words are the correct ones—"there is no absolute rule"—but at the same time if the theory of faulty elimination be the true one, the conclusion is inevitable that failure to control the attacks by therapeutic measures necessitates the induction of surgical procedures. The one who interferes the most and the soonest (Lohlein) has reduced the mortality among eclamptics to 19.38 per cent (325 cases), while Green, whose efforts are largely therapeutic, has a mortality of 25 per cent. One remark which Green makes is of importance: "They were all bad cases, cases which had been neglected before being sent to the hospital." If neglect made bad

cases, the deduction is fair that prophylaxis makes good ones, and the conclusion is not strained that active interference, if not too long delayed, would also make good ones. Proof of this last statement is to be found in Kronig's results. Kronig treated eighteen cases with *accouchement force* and had only one death, or 5.5 per cent.

Treatment of the Umbilical Vessels.—

R. L. Dickinson, in the *New York Medical Journal* of March 4, 1899, states that the ideal method must accomplish three results—the vessels must be securely and permanently controlled, infection must be impossible, and the danger of hernia reduced to a minimum. A procedure already beyond the experimental stage accomplishes these results. Electrohemostasis with Dr. Skene's forceps is a drying process. The vessel or the stump grasped in the bite of this instrument is in the space of half a minute to two minutes reduced to a white, horny ridge, comparable to the edge of one's finger-nail in consistence and color. This edge does not slough, but promptly becomes reorganized. As Dr. Pryor has shown, water pressure applied to the vessel from behind will make it burst elsewhere, but not at the end thus treated.

The author proposes that in our maternities we give this method a trial. When the child is removed from its mother the cord is caught in two Keith clamps and cut, but not ligated. The cord is stripped of its jelly at its base. A square of gauze five or six layers in thickness may be split up to its center. The slit is passed around the stump which lies at the apex of the V, and the cut sides are then lapped over so that the skin of the abdomen is protected from any heat. This gauze should be wrung out of some solution, so that it is damp but not dripping, or a perforated square of asbestos, sterilized by flaming, may be substituted. The jaws of the Skene clamp are coated with vaselin, and the clamp applied so that the edge next to the abdominal wall is placed at the junction of skin and cord. While the cord is drawn upward, the clamp is closed firmly to its last notch. The clamp is lifted away from the abdominal wall and the current is turned on for about two minutes. A little bubbling will occur as the juices sizzle out. The amount of heat is said to be about 180° F. After the clamp is removed the scissors should cut through the desiccated flattened part of the cord rather close to the abdominal side, so as to leave but a narrow ridge projecting. This part of the cord seized becomes organized tissue, and he believes will ordinarily retract without leaving a projecting button.

One can imagine two conditons to which this method would be

inapplicable. Where there is a suspicion of umbilical hernia, and where the junction of skin and amnion is in a rather deep pocket in the abdominal wall, it is possible that one would not feel justified in putting traction enough on the cord to pull up its skin edge to the surface so that the clamp could be applied and the shield used without burning the skin around it.

To imitate this method, though very imperfectly, in the absence of the Skene outfit, a pile clamp and a Paquelin cautery may be used. The utmost care must be exercised in order that the stump be left dry, white, and horny, but nowhere must it be black or charred; otherwise sloughing will occur.

So complicated a procedure will, of course, never find extended application in general practice. Too little attention, however, is given this subject, and complications due to a want of care are by no means infrequent. The suggestion of Budberg (*Centralblatt für Gynecologie*, No. 47, 1898) is of interest in this connection. It would seem *a priori* that results might be obtained with this method that are quite equal to Skene's forceps. He recommends an alcohol dressing, either dilute or absolute; the result with the latter must certainly be better than with the former. The cord at the time of ligation is living tissue; the alcohol would at once extract the water and fat, and thus prevent decomposition. The desiccation of the cord would be accomplished as thoroughly as by the Skene forceps.

The Treatment of Unavoidable Hemorrhage by Removal of the Uterus.—

Lawson Tait, in the *Medical Record* of March 4, 1899, states that he thinks the mortality from placenta previa is very much underestimated, and that many patients die of secondary complications, due to the misplaced placental sinuses. Another aspect of "unavoidable hemorrhage" is one of the few points in the practice of surgery in which conduct is to be influenced by ecclesiastical authority. In cases where the interests of the mother and child conflict, those of the former must yield. A case in which these conditions obtained recently presented itself. The patient was young and slightly built, and had as bad a history of hemorrhage as a woman well could have. She had always had "something wrong" inside, and had been a regular consumer of ergot for years. She had been twice curetted and cauterized. She nearly lost her life from postpartum hemorrhage in her second confinement, and had several miscarriages with severe losses, and he found her in her fourth confinement at the full time, with the cervix closed and rigid, the liquor amnii drained off, the uterus firmly contracted over the

child, and yet she had been bleeding with alarming profusion for five hours in spite of orthodox treatment. The child was easily ascertained to be alive, and the consideration of its interests as superior to those of the mother was not pressed. But the author confesses that the recollection of previous experience made him hesitate to do what was clearly necessary—the forcible dilatation of the cervix and the extraction of the placenta; should this be followed by version, or should he leave the after-labor to Nature and the child to its fate? An alternative occurred to him to which he was prompted by the splendid success which had followed it in his hands and those of others under different, yet very analogous, circumstances—removal of the uterus. It had many arguments in its favor; it would save the child; it probably would save the mother; it would cure her of the life of perpetual misery and risk in which she had been living for years; and would therefore assist her in properly rearing the children she had, rather than tend to procreate others to whom she certainly showed no likelihood of ever being able to give proper care.

The operation was followed by an uninterrupted recovery. The author anticipates that he will be criticized by the "antimutilationists," but he feels that the circumstances fully justified his decision.

Eclampsia.—

S. N. Pool (*Philadelphia Medical Journal*, March 25, 1899) read a paper before the Pittsburg Academy of Medicine, in which he reviewed the numerous theories which have been held regarding the production of this disorder. He says that recent investigations show that it is due to a toxemia the nature of which is unknown; associated with this is defective elimination.

Renal insufficiency is almost invariably followed by eclampsia, but the presence of albumin in the urine does not always mean that the kidneys are insufficient, nor does its absence indicate normal renal activity, or immunity from eclampsia. It is stated that six per cent of pregnant women have albumin in the urine, but in a series of 94,935 pregnancies collected from various sources, there were but 462 cases of eclampsia. In these cases as many women had convulsions during labor as before and after labor combined. Prophylaxis is very important. Though eclampsia is not to be regarded as the result of nephritis, yet the presence of albumin in the urine is a danger-signal. The urine should be examined every two weeks during the latter part of pregnancy, and if evidence of nephritis be found, milk diet, hot-water baths and hot-air baths,

purgatives, alkaline waters, and iron in some form are indicated. If under these measures the general symptoms become aggravated, the question as to the induction of premature labor comes up. Should convulsions occur and the usual sedatives—chloral, the bromides, morphine, etc.—fail, induce labor by passing a bougie into the uterus. If the convulsions complicate labor, the same remedies with chloroform are to be used. Croton oil may be given. Veratrum viride has been praised too highly. Venesection is preferable (extracting ten to eighteen ounces of blood), followed by the introduction of normal saline solution. If labor is at all advanced, terminate it as soon as possible. Convulsions after delivery are to be combated with the usual sedatives, combined with measures calculated to stimulate the various excretory organs.

Pelvic Disease in Relation to Nervous and Mental Affections.—

Frederick Peterson (*Journal of the American Medical Association*, March 25, 1899) closed an address before the American Medical Association at the Denver meeting with the following words:

"There is no evidence whatever to support the opinion that insanity was ever due to a mere reflex influence from pelvic disease. In insanity the two great etiologic factors are hereditary instability and some physical or moral stress directly affecting the nervous system. There has never been brought forward any evidence whatever to show that either epilepsy or chorea can be induced by disease of the female organs. I take the stand, therefore, that the field of the gynecologists in the domain of nervous diseases is comparatively restricted and unimportant, and I, in common with the best men of their own specialty, raise my voice in strong protest against the still prevailing tendency to further enlarge the field of operative gynecology by unjustifiable and unscientific surgical interference in cases of nervous and mental disease. It is better to do too little than too much. It is better to err on the side of science than to give the patient the so-called 'benefit of the doubt,' which should rather be called the affliction of the doubt. Let the gynecologist by all means treat any serious disease of the pelvic organs which may be present in any case of nervous or mental disorder just as he would in a similar affection in an otherwise sound and sane woman, but let him not sacrifice upon the altars of strange gods those who trust to his knowledge, skill, and broad judgment. The reflex neuroses and psychoses are will-o'-the-wisps that lead one into obscure places, into a maze, and then vanish, leaving him astray, bewildered, remote from any familiar landmark."

Differential Diagnosis of Pelvic Peritonitis and Pelvic Cellulitis.—

Ely Van de Warker, in the *American Gynecological and Obstetrical Journal* for March, 1899, gives the following differentiating points:

PELVIC PERITONITIS.	PELVIC CELLULITIS.
Following labor or abortion in a few days.	Eighteen to twenty days after.
Beginning in a rigor.	No rigor (Bernutz).
Severe fever, face pinched, prostration.	Less fever, no facial or general reaction.
Pain acute, sharp.	Pain dull, throbbing-like, beginning abscess.
Great tenderness of abdomen.	Lesser tenderness.
Tumor usually behind pubis.	Tumor usually in iliac fossa.
Tumor as a rule not above pelvic brim.	Tumor at or above rim.
In early stage more evident in vaginal cul-de-sac.	In early stage less evident in cul-de-sac.
Suppuration rare.	Suppuration very frequent in phlegmons (Bernutz).
Purulent pelvic peritonitis attended with symptoms of peritonitis.	No symptoms of peritonitis.
Purulent mass, intra-abdominal.	Purulent mass in iliac fossa, subperitoneal.
Pus confined.	Pus often diffused and burrowing.
Pus tends toward viscera, or encysted.	Pus tends toward abdominal wall or deep iliac fossa.
No retraction of thigh.	Retraction of thigh.
When mass extends into the iliac fossa it is not well defined.	In cellulitis always well defined.
Tumor elastic or fluctuating.	Tumor more solid.
Always uterine displacement with peri-uterine mass.	May be absent with very large pelvic mass.
Never involves abdominal wall.	Often involves abdominal wall.
Relapses from slight causes frequent.	Relapses rare.
Sometimes an intestinal percussion note over mass.	Dull on percussion.
Never extends to vaginal wall.	Extension of cellulitis from broad ligament or iliac fossa into vaginal wall.
Often associated with specific infection of vagina.	Usually no specific infection.
Occurring without lesion of genitalia.	Often following lesion.
Pain always intrapelvic.	In addition, pain in anterior and inner side of thigh to leg and foot.
Phlebitis not observed.	Phlebitis an occasional complication.

Diet of Sick Children.—

Springer, of Berlin, quoted by Charles H. Shepard in the *Dietetic and Hygienic Gazette* for March, 1899, says extracts from cereals, obtainable everywhere, are the best bone builders, and therefore well adapted to the growth and perfection of children. Here is his recipe: "Take two soupspoonfuls each of corn, barley, oats, rye, maize, and bran, boil in four quarts of water three hours, allow to cool, and then strain. If necessary, add enough water to make a quart. A palatable, yellowish fluid is obtained, which may be improved by the addition of milk for children." The results of this food, with several children placed under his care, surpassed his highest anticipations. This preparation has the merit of being equal in value to any of the extensively advertised food nostrums of

the day, and is much less expensive. Foods prepared after secret formulas should no more be encouraged than medicines so made; some of them are simple frauds, particularly the so-called diabetic foods, and others are dangerous to the sick and well alike. The worst of all are the alcoholic beverages masquerading under the name of malt. The best and most economical food materials for universal consumption are those in common use, and which need no fancy names. One authority says that in an attack of summer diarrhea in children under two years of age all albuminous and starchy foods should be prohibited. It is the mature opinion of expert physicians that at such times milk and milk foods only tend to furnish fresh fuel for the growth of pathogenic bacteria in the gastrointestinal tract. Give instead nothing but toast-water or barley-water for thirty or forty-eight hours. They contain plenty of nutrition for such conditions, and rarely produce any disturbance.

Albuminuria in the Puerperium.—

H. C. Mabley, in the *Cleveland Medical Journal* for March, 1899, reports a case of albuminuria occurring postpartum. He gives the following conditions:

Albuminuria may be looked for during the lying-in period in women suffering from a nephritis, which has either developed during pregnancy or existed prior to that time, in a chronic or perhaps latent form.

Nephritis depending upon an infection of the genital organs is not uncommon in the puerperium, and here the amount of albumin seems to vary directly with the extent of the lesions of the pelvis. Nephritis has been especially mentioned as a complication of uterine phlebitis and lymphangitis.

Mammary inflammation may cause nephritis. Norris refers to a case which developed on the fourteenth day after labor in a patient suffering from a virulent abscess.

It is conceivable that a nephritis may occur in the puerperium as an intercurrent affection, resulting from cold or toxic agents. At this time, moreover, the conditions present in the kidneys, while not of themselves amounting to disease, might tend to render these organs particularly susceptible to influences of such a nature.

Albuminuria in women recently confined may be due also to catarrhal or suppurative affections of the bladder and ureters, to pyelitis, and in rare instances to perinephritic abscess.

Finally, valvular lesions of the heart, with failure of compensation preceding or subsequent to labor, constitute a possible cause for the appearance of albumin and casts in the urine.

Sterility in Men.—

M. Romme (*Journal de Médecine de Paris*, March 5, 1899) says it is not long since sterility was attributed to women. The rôle is now reversed, as gonorrhea is admittedly a frequent cause of sterility in men. Numerous writers who have examined the subject claim that in a large proportion of sterile marriages the men have had gonorrhea. The explanation of this is usually found in an infection of the woman. This may be the case; in others, however, it is due to disease of the seminal vesicles and ducts, causing azoospermia. This latter condition was found by Simmonds in 140 out of 1000 cadavers examined. In two cases of lead poisoning and one of morphinism the testicles were normal. The same was true of syphilis. In five cases of diabetes spermatozoa were abundant in four. In most chronic disorders spermatozoa were found, but in acute cases there was a suppression. In six cases of inguinal hernia the testicle on the same side did not contain spermatozoa.

Formalin in the Treatment of Whooping-cough.—

H. S. Oliphant, in the *New York Medical Journal* of March 4, 1899, states that he has been using formalin in the treatment of whooping-cough for the past year. His experience convinces him that it is a specific in this affection. He regards pertussis as a local faucial infection which later extends to the air-passages. He regards whooping-cough as a self-limited disease with an average duration of from six weeks to two months. Under formalin treatment the duration of the severest cases was less than a week, and several cases were cured after three applications. He warns against the use of too strong solutions, but the strength which he employs is not stated, nor is the method of application, though we infer that it is applied to the fauces; whether with a brush, swab, or in the form of spray is not stated.

Muriate of Quinine in the Treatment of Leucorrhea.—

R. S. Miller (*Lancet*, Jan. 21, 1899) employs this substance in the treatment of leucorrhea, granular erosion of the cervix, vaginitis, and septic endometritis. He says that the drug is a powerful antiseptic and is slightly astringent. As an intra-uterine douche it has proved to be unirritating and free from toxic effects. He has largely employed pessaries containing two or three grains of the muriate combined with extract of hamamelis. For douching, a grain to the ounce of warm boric acid solution is employed, the same strength being used in douching the bladder.

FORENSIC MEDICINE.

The X-Ray in a Murder Trial.—

On the 8th day of July, 1897, George Orme shot James Punzo in the back of the head, a bullet of 32-caliber being discharged from a revolver. The skull was penetrated one and a half inches to the left of the median line and the same distance above the superior curved line of the occipital bone. It entered the left hemisphere of the cerebrum, which it penetrated to the depth of about two inches.

On the day of the shooting Punzo was taken to Arnot-Ogden Hospital, in the city of Elmira, N. Y., where the wound was probed, but the bullet was not located. For the next six days he was in a somewhat dazed condition, with more or less elevation of temperature. For the next fifteen days he showed decided improvement, the temperature, respiration, and pulse being normal. At the end of this time he was so far recovered that he was able to leave his bed every day and walk about. The twenty-third day after the infliction of the wound an attempt was made to locate the bullet by the *x*-rays. The patient was placed under ether and kept so for fifty minutes. A Crookes tube was then placed in a stationary position at a distance of one and a half inches from the head. This tube was excited by a Holtz static generator of five hundred thousand volts. Its use was continued for thirty-five minutes, but the resulting negative did not show the position of the bullet.

Within a few hours after this *x*-ray exposure the patient's temperature rose to 100.4°, and from that day until he died, thirteen days afterwards, the temperature fluctuated from one to two points, and he was in a semicomatose condition, which gradually increased up to the time of death.

At the autopsy the bullet was found to have made an opening in the brain about one and a half inches in depth, in which there was no abscess or accumulation of pus. Plastic lymph had been effused surrounding the bullet.

E. H. Davis, who performed the autopsy, said the administration of the anesthetic at any time after adhesive inflammation had supervened was unwise, and in his opinion James Punzo came to his death from injuries to the brain caused by a gunshot wound, anesthetics, and the *x*-rays.

The defense was that death was not caused by the bullet alone, but chiefly by exposure to the *x*-rays and repeated and improper administration of ether. The defendant was acquitted.

John T. Pitkin, in the *American X-Ray Journal* for March, 1899,

reports the above case and states that he was a witness for the defense, having given substantially the following testimony: The apparatus used was too small and was consequently dangerous. Such an examination of a brain already irritated would, in his opinion, not only have retarded the healing process, but result in a breaking down and softening of the brain tissue. This would be aggravated by the fact that no preventive means were employed to obviate their dangerous effects. The parts were too close to the tube. No plate of aluminum connected with a ground wire was interposed between the Crookes tube and the patient's head to absorb the electrical streamers. No attempt was made to insulate the patient from the electrical conductors of the apartment.

[There may be some force in the contention that under the circumstances an *x*-ray examination was not justifiable; that it was not properly made is apart from the issue. The autopsy did not reveal a cause of death connected with the bullet wound. If a complete autopsy was made the condition of the other organs is not stated. It is not certain that this contention resulted in the acquittal, as the tragedy was of a domestic character and sympathy for an outraged husband may have played an important part. The case is of interest from a forensic standpoint, as showing how a supposedly innocent surgical investigation may furnish the fabric of a criminal defense.]

Conviction for Felony a Bar to Practice.—

In 1878 Dr. Benj. W. Hawkar, a legally qualified practitioner of the State of New York, was convicted for felony, having performed a criminal abortion, and was sentenced to prison for ten years. At the expiration of his sentence he attempted to resume practice, with the result that the Medical Society of the County of New York brought suit against him for a violation of the State laws. His counsel argued that an enforcement of the law making it illegal to practice medicine after the conviction of a felony was unjust, and in effect adds a new punishment for the crime.

The contention of the people was that they had a right to demand good character as one of the qualifications for the practice of medicine. In the trial a verdict of "guilty" was handed down and a fine imposed. Carried to the Appellate Court, the verdict was set aside, all but one judge concurring in the opinion. The case was then taken to the United States Supreme Court, where the Appellate Court decision was reversed and the verdict of conviction in the trial court sustained.

Queen versus Taggart.—

This case is referred to in the *Canadian Practitioner and Review* for March, 1899, and it is regarded as one of unusual interest from a medicolegal standpoint. The comments of the *Practitioner* on the attitude of the prosecution are anything but complimentary. If conduct of this kind on the part of the public prosecutor attracts attention in Canada, we can only guess what comments would be made by the same journal upon some of the prosecutions in the name of the people upon this side of the border. The *Practitioner* takes the unusual position that it is the duty of the Crown to secure justice as far as possible and not to strive after a conviction. With this in view the authorities appointed medical experts to examine the prisoner. After a most careful examination four medical gentlemen of high standing in the profession unanimously decided that the prisoner was a typical instance of delusional insanity, and that his actions had been sanctioned by voices that he had heard telling him to perform the dreadful deed. After this examination the four experts made out a report which all signed, and which was forwarded to the proper officers. At the trial of the prisoner the prosecution completed its case without the slightest reference to the report of the medical experts who had examined the prisoner. During the defense the counsel for the prisoner demanded to see the report of the experts who had examined the prisoner, a request which was refused by the prosecutor.

Regarding this refusal the editorial says: "Had the defense not decided to put in the plea of insanity as a defense for the prisoner's action, we can only guess the course the Crown would have taken. It is only reasonable to assume, however, that no reference would have been made to the medical experts' report, nor would any of them have been called as witnesses. We have no hesitation in stating that in our opinion such a course as the above cannot be too strongly condemned. For the Crown to be fully informed as to the prisoner's insanity and not only make no reference to such information, but refuse to produce it when requested so to do, seems most remarkable." In view of this refusal the defense called two of the experts who had examined the prisoner on behalf of the prosecution, and they testified to the prisoner's insanity.

The editorial goes on to say: "It is perhaps due to our lack of learning, but it puzzles us to see why the case was dragged through a whole week when it could have been disposed of in a few minutes and the unfortunate man sent to the asylum, where the jury properly assigned him." *A whole week* for a celebrated criminal trial

sounds very strange to our ears, accustomed as we are to having at least a month taken to secure the jurymen. Three jurors a week is fairly good progress in this part of the country, and four weeks devoted to obtaining twelve good men and true does not seem to us to be protracting the trial. The lack of knowledge in this respect on the part of the editor of the *Practitioner* can, we think, be overcome by a short visit to Northern Illinois.

It is refreshing to note that there was an agreement between the medical gentlemen who examined the prisoner; they agreed that he was insane and irresponsible. The medical evidence throughout is spoken of as peculiarly clear and able, and reflected great credit on the profession. In closing the editorial states: "It is to be hoped that it will be a long time before the Crown again adopts such a course, where a man's life hangs in the balance."

An Injury to the Chest in a Personal Injury Suit.—

H. A. Hare, in the *Journal of the American Medical Association* of March 18, 1899, under the title "Acute Tubercular Infection; Its Diagnosis from Pneumonia and Typhoid Fever," writes that he was recently called to a case in which a man well advanced in years was thrown from the platform of a moving street-car and struck on his side. Within a few days he developed symptoms of pulmonary consolidation, became actively delirious and almost uncontrollable. A few days later he died, and the post-mortem showed a pneumonia due to tubercular infection, arising from a low grade of chronic tubercular disease. This latter had been caused by the occupation of the man, that of a knife-grinder. In this instance the injury broke down the barrier afforded by Nature to protect the lung from general infection; it being removed, the bacillus became an active element in the cause of death. His family sued the railroad company, whose defense was that as the disease was tuberculosis, and not ordinary pneumonia, the accident was not responsible for the pulmonary disease which caused death. It was testified, however, that he might have lived for years without illness, if the accident had not converted the chronic state into an acute one. The verdict was given for the plaintiff.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

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ORIGINAL ARTICLES.

TREATMENT OF INFECTED WOUNDS.

BY DANIEL N. EISENDRATH, A.B., M.D.,
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For the general practitioner, and especially for those of us who devote our energies to surgery, this is one of the most important subjects with which we have to deal. An accurate knowledge of this seemingly unimportant chapter in surgery and a clear understanding of the treatment of infected wounds is absolutely essential in order that the general practitioner may keep abreast of the constant onward march of modern surgery. Before taking up the treatment of infection in detail, it will be well for us to review shortly some of our present knowledge of the subject. It will be unnecessary to go into the history of the advancement of our knowledge from the time of the discoveries of Lister and Pasteur to those of the pyogenic microorganisms by Rosenbach.

It will be sufficient to state that at the present time the organisms concerned in pyogenic infection are the staphylococcus pyogenes aureus and albus, the streptococcus pyogenes, the bacillus pyocyaneus, and the bacillus pyogenes fœtidus. The less frequent cases of infection of wounds with the colon, typhoid, anthrax, and diphtheria bacilli and the bacillus proteus may be left out of consideration here. In practice the majority of cases are due to the infection with one of the varieties of staphylococci, which on account of their manner of growth produce a circumscribed form of suppuration with more or less thick, yellowish pus of the consistency of cream, and secondly with the streptococci, which, owing to the fact

that they form chains in growing instead of small clusters of organisms, have a tendency to cause a progressive infection of the wound with the production of a thinner, less viscid pus, looking more like turbid blood-serum.

Both groups act through their toxins in two ways: First, by chemotaxis they cause a hyperemia of the part infected, with the migration of leucocytes from the blood-vessels and young connective tissue cells to the spot of infection to act as phagocytes or poison destroyers; in other words, all the phenomena of inflammation, as we understand it at present, are a defense on the part of the tissues against the invasion of the enemy. Secondly, if this battle has been successfully waged by the microorganisms, their poisons liquefy the tissues by peptonizing or digesting them, in the same manner as they liquefy the gelatin in our test-tube in the laboratory.

Some interesting experiments have been made during the past few years upon the rapidity with which absorption begins in infected wounds. Shimmelbusch infected the tails of mice with anthrax bacilli, and cut off the tail at different intervals proximal to the point inoculated. He found that absorption is so rapid that if the tail were cut off after ten minutes had elapsed, the animals could not be saved. Many others (Reichel, Hanel, Messner, and Henle) came to similar conclusions. These, however, were misleading, owing to the fact that infection of our wounds does not take place by pure cultures, and but rarely by pus, both of which were the methods employed in these experiments. Friedrich has attempted to reproduce the conditions as they are found in nature. He found that animals died in fifty-four hours, on an average, after inoculation with garden earth, and in thirty-one hours with dust. Absorption from the wound began about six to eight hours after infection, and if the infected surface was removed mechanically before this time had elapsed it was possible to prevent a spread of the infection. He further found that if the wound was kept open and the secretion allowed to drain out, it was also possible to keep the animals alive a longer time.

These experiments prove several points which have been observed clinically, to which I shall refer shortly.

Infection is met with in practice in a number of different forms: (1) The circumscribed, as seen in a folliculitis, a carbuncle, a furuncle, paronychia, or an acute abscess; (2) phlegmonous inflammation with suppuration; (3) progressive purulent infiltration.

If we keep these three varieties clearly in mind it will be easy to change the general principles of their treatment to suit the particular

anatomical region in which they occur. It is beyond the scope of the present article to treat of erysipelas, anthrax, or any chronic form of infection, such as tuberculosis, actinomycosis, glanders, etc. To come back to our first, the circumscribed, form, the only difference between the different varieties is one of extent. A folliculitis should be treated by extracting the hair which always forms the center of such infection, and then applying some antiseptic wet dressing composed of several layers of gauze covered by gutta-percha tissue or waxed paper, etc., saturated with some mild solution such as the following:

℞ Acidi salicylici ..... gr. xvj.
Alcoholis ..... q. s. ad ʒ ij.
Teaspoonful to one-half glassful of hot water, to be used as directed.

This is nearly a Thiersch solution. It is non-irritant, can be easily applied by the patient himself, and has proven a very satisfactory mild antiseptic lotion. I renew such a wet dressing twice or even three times daily, until all evidence of beginning infection has disappeared. The shriveling of the skin caused by this solution is not a sufficient drawback to cause it to be dispensed with. Instead of this, one may employ a weak boracic solution, a ¼- to ½-per-cent solution of formaldehyde, one-per-cent acetate of aluminum, 1:4000 lactate of silver lately advocated by Crédé, or alcohol used by Salzwedel. I seldom use bichloride wet dressings on account of their irritating action on the skin.

I must digress here to advocate the use of hot wet dressings for all forms of local infection, whether circumscribed or diffuse. The gauze saturated with liquid, even though it be salt solution or distilled water, acts through capillarity to drain away the wound secretions, including the microbes contained therein, and thus assists the tissues to overcome the infection. They have proven of such great value that I employ them as almost routine practice with excellent results.

In furuncle the infection has invaded the connective tissue of the skin, and in these, if the application of either ice or repeated hot wet dressings does not cause a resolution, an incision, preferably a crucial one, in order to better pack the wound, should be made early. With the aid of a weak solution of cocaine injected around the area, the blood being prevented from carrying away the anesthetic by constriction of the limb at some higher point by an Esmarch, the operation is practically painless. This is by far preferable to freezing the tissues with ethyl chloride or injecting a Schleich solution. The incision must be large enough to extend nearly to the edge of the

infected area, and if crucial the subsequent repacking of the wound is far less painful. For packing, any kind of gauze with wide meshes can be employed, and the strip should be cut off at the level of the skin in order to prevent pulling it out when the dressing is renewed. The parts should previously have been carefully disinfected and shaved, and after the operation a well-padded splint should be applied to keep them at rest. Frequently elevation of the part upon a pillow, inclined-plane splint, or sling suspended from a pole at the side of the bed, is of the greatest benefit.

For a carbuncle, which is made up of many foci of infection, the treatment is practically the same. In addition to the measures above described, injection of the surrounding tissues with five-per-cent carbolic solution will frequently check its progress.

In paronychia, which always starts in the connective tissue, if the infection passes under the nail, lifting it up, we should not hesitate to remove the same partially or wholly at once, for neglect of this has caused some severe cases of general sepsis. We should also remember the readiness with which the infection in the hands or feet invades important structures, *e.g.*, the periosteum of the phalanges (felon), the tendon sheaths, joints, and is frequently transmitted through the lymphatic circulation with remarkable rapidity to the lymph glands, which receive the lymph vessels of any particular region. This latter may occur without the usual warning in the shape of a visible lymphangitis. Not infrequently infection from the fingers may travel along these channels, as I have observed in several cases, to the subdeltoid bursa, and the shoulder-joint thus becomes involved early.

Certain other anatomical points must be kept in mind in the treatment of infected wounds in the fingers and hand. On the dorsum, the loose arrangement of the subcutaneous connective tissue presents characteristics similar to those of any other subcutaneous infection. The presence of a large number of hair follicles favors the localization of septic processes in the cutis, which lead to the formation of typical furuncles, or rarely a carbuncle. On the palmar aspect of the fingers and the hand, instead of the longitudinal and loose arrangement of the connective tissue on the dorsum, there is a dense network of short, thick fibers, enclosing a number of small acini of fat. The main direction of these fibers is from the cutis to the periosteum or to the sheath of the tendons, to which they are closely attached. Upon this depends the tendency to penetrate the bone or the tendon. Another anatomical point to be remembered is the relation of the flexor tendon sheaths. Those

of the index, middle, and ring fingers represent separate and closed receptacles, which terminate at the level of the metacarpo-phalangeal joint. For a short distance the tendons have no proper sheath, and then again enter the common palmar bursa. The sheaths of the flexors of the thumb and little finger are in open communication with each other and with the palmar bursa. From these we deduce the following: In an infection of the fingers, especially of the palmar aspect, make a longitudinal incision, preferably to either side of the tendon, and keep the wound open with gauze packing. If the periosteum has been invaded, incise down to it early, and it will often be possible to save a phalanx. Remember the tendency of these infections to invade tendon sheaths. If this has taken place, open the same early, remembering the above anastomoses, and especially those of the thumb and little finger.

In the second variety of infection I have mentioned above, the same general principles hold true. In this there is a rapid extension of the disease without leading to circumscribed collections of pus. These are most frequently caused by the streptococcus. This is frequently called a cellulitis, though this is a misleading term. The inflammation does not affect cells, but connective tissue, invading intermuscular septa, tendon sheaths, and fasciæ, penetrating joints or even the larger serous cavities, and frequently ending fatally, either through toxemia, from a constant absorption of toxins from the infected areas, or through septicemia or pyemia proper, from entrance of pus germs into the general circulation. The treatment should be vigorous and prompt. Small incisions are of no avail. Long incisions, parallel if necessary, should be made, exposing the entire area involved; necrotic tissue removed; tendon sheaths and bursæ widely opened. If joints have been invaded no time should be lost in draining them with drainage-tubes and gauze. If possible, the application of an Esmarch above the point of infection facilitates the operation. The wound should be irrigated with strong (1:1000) bichloride solution or peroxide of hydrogen. The infected tissues should be touched with 10-per-cent zinc chloride solution, and then packed in every direction with iodoform or even plain gauze, and a dry dressing applied for a few hours, until a greater part of the parenchymatous oozing, which may be very profuse, has ceased. A splint or fenestrated cast in a compound fracture should always be used.

The value of packing the wound is proved by the above quoted experiments of Friedrich. It drains away the secretions and assists Nature in her effort to combat the foe. After a few hours, wet

dressings, constant immersion of the parts in some especially constructed bath filled with a mild antiseptic lotion, or constant irrigation with some form of apparatus, are desirable. The wound should be dressed once or twice daily, according to its severity, irrigated with 1:4000 bichloride (watching for symptoms of mercurial intoxication), or 1:4000 lactate of silver, or with peroxide. It should be thoroughly repacked and a wet dressing reapplied. For the general condition, quinine, whiskey, strychnine in liberal doses can be given. Streptococcic serum is undoubtedly of great value and should be given a trial in severe cases, especially if symptoms of general sepsis appear. If the case seems hopeless, early amputation, if an extremity be involved, is advisable.

The third variety of infection is the purulent edema of Pirogoff. It is an advanced stage of the preceding, and is always attended by extensive connective tissue necrosis. It has wrongly been called phlegmonous erysipelas. Large incisions extending to the fascia must be made, these connecting with each other or with smaller intervening, counter-drain openings. Either drainage-tubes or gauze drains may be used and a wet dressing applied. The remainder of the treatment is the same as for the preceding variety.

In short, our maxim in the treatment of infected wounds should be early and not too small incisions, disinfection and packing of wounds, wet dressings, and systemic treatment.

103 STATE STREET, CHICAGO.

A CASE OF PAGET'S DISEASE (MALIGNANT PAPILLARY DERMATITIS).[1]

BY MAXIMILIAN HERZOG, M.D.,
Professor of Pathology in the Chicago Policlinic.
(From the Laboratory of Pathology of the Chicago Policlinic.)

In 1874 Sir James Paget described a disease of the skin of the female mammary gland which was then looked upon as a chronic eczema leading finally to a carcinomatous degeneration or process. Later on other observers, particularly French and German authors, came to the conclusion that Paget's disease, even at the early stage, is not to be looked upon as a chronic eczema at all. Such French writers as Darier and Wickham, who first called attention to cellular inclusions found in Paget's disease in the proliferating epidermal epithelia, were of the opinion that the affection is one *sui generis* depending upon specific coccidia. This view, however, has been again almost entirely abandoned, and this disease is now generally looked upon as a peculiar, very slowly progressing form of carcinoma. This view is now held by Karg, Unna, Ziegler, and English and American writers who have had a chance to observe cases of this rare affection. A case of Paget's disease was some time ago reported in our country by Wiggin and Fordyce (*New York Medical Journal*, October, 1897), who have illustrated their description by excellent cuts.

Darier himself, in a monograph published in Besnier and Fournier's "Iconographie des Maladies Cutanés," etc. (Paris, 1898, p. 247), while he still mentions his former views with reference to the coccidia nature of the cellular inclusions, has apparently with resignation abandoned his earlier opinion, because he says: "En raison de leur apparence si differente de celle des cellules malpighiennes au millieu desquelles ils sont disséminés, j'ai cru pouvoir considerer ces elements comme des parasites, comme des coccidies. Cette opinion aussi defendue par Wickham et d'autre n'a pas prevalu."

According to Darier the disease has been rarely observed before the thirtieth year, as a rule after the forty-fifth year of life. The majority of patients have given birth to children and nursed them. There are, however, on record three cases of Paget's disease occurring in men. In one of these three cases the seat of the affection was the usual one; in two cases the scrotum and the perineum were affected. Darier now holds that Paget's disease is of the nature of

[1] A paper read April 10, 1899, at the meeting of the Chicago Pathological Society, Section in Pathology of the Chicago Medical Society.

a carcinoma, characterized, however, by the following particular clinical features: First, remarkably slow development, especially during the earlier stages; secondly, a minor degree of malignancy, shown by the fact that recurrence after removal is slow; thirdly, involvement of the axillary and other neighboring lymph glands, absent for a long time, and only occurring towards the very last.

It is not necessary to refer in these short introductory remarks to the histology of Paget's disease as reported by others, since the case here presented offers in its main features a typical picture of the microscopic pathology as usually described. The case occurred in the practice of Dr. Weller Van Hook, to whom I am indebted for the following short abstract of the history:

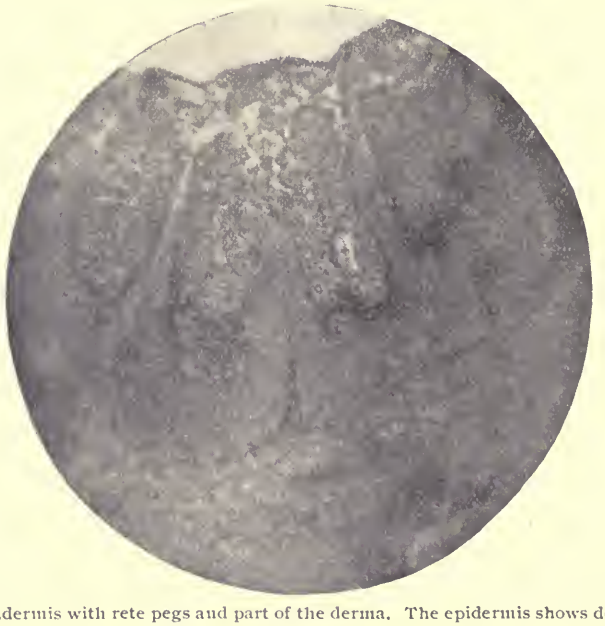

FIG. 1.—Epidermis with rete pegs and part of the derma. The epidermis shows degenerated epithelia (x 50).

Mrs. X——, 40 years of age, had three children, the youngest of whom is 11 years old. About three months before Dr. Van Hook saw her she had noticed a small elevation, situated about half an inch above the right nipple. There was no pain, itching, or other evidence of sensory disturbance until ten weeks ago, when patient accidentally injured the little mass with a string. Some hemorrhage occurred, and the mass remained vividly red, looking like granulation tissue. Dr. Van Hook some time in February, 1899, removed

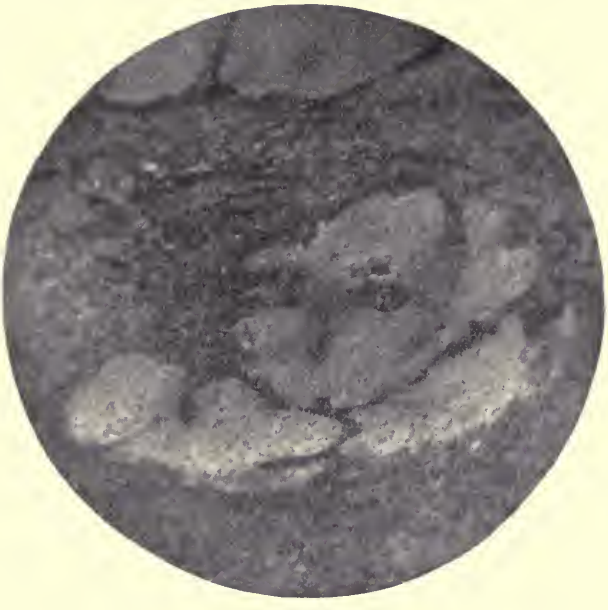

FIG. 2.—Epithelial nests in derma (x 80).

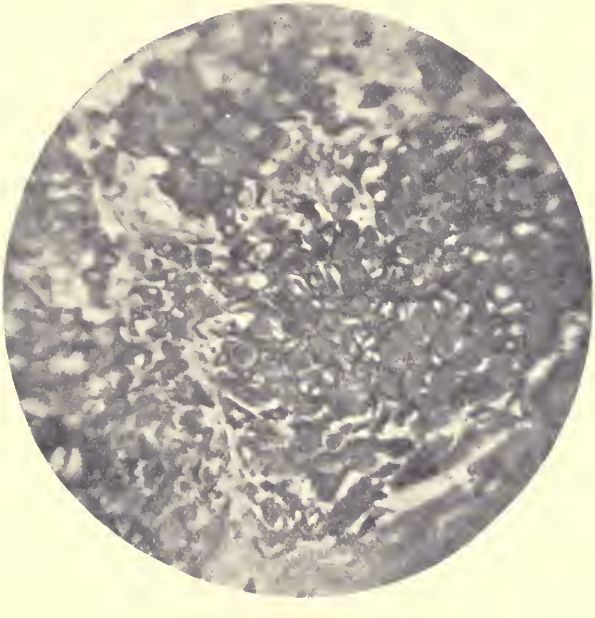

FIG. 3 —Swollen hydropic degenerated epithelia (x 200).

this mass at the Policlinic Hospital, and it was referred to me for examination.

The small piece of tissue excised when first examined was found to be soft and edematous, its upper surface pinkish or rose red, uneven, and moist. It was fixed in Zenker's fluid, embedded in paraffin, sectioned, and stained according to various methods, including Unna's polychrome methyl-blue-orcein stain.

The microscopic examination showed that the epidermis as well as the derma were materially thickened, the former by a proliferation and extensive increase of epithelial cells, the latter by an enormous infiltration with round cells of various types, to be more fully described below. These cells infiltrated the papillary layer, the derma proper, and following the course of the vessels they descended into the cutis. Wherever these infiltrating round cells were found, they had pushed apart the fibrous connective tissue. In the epidermis the stratum germinativum was thickened, its cells were large, and they did not show any prickles. The nuclei were large and vesicular and as a rule poor in chromatin, the nucleoli being large and deeply stained; few karyokinetic figures were found in the innermost layer of the stratum Malpighii. The rete pegs in some places penetrated deeply into the derma and even into the cutis; in other places they had by extensive cell proliferation become so thick and wide that there was practically no dermal papillary layer left. In still other places there were found isolated epithelial nests in the derma, surrounded everywhere by connective tissue elements. The epithelial cells of the stratum germinativum showed a tendency to become vacuolated, so that the nucleus was found in a space from which the cell protoplasm had retracted. Some of the cells contained those deeply staining inclusions which are looked upon by Darier, Wickham, and others as coccidia. These elements are, however, now generally considered not to be protozoa. In our case it can in some sections be clearly seen that these inclusions are leucocytes which have wandered from dermal vessels into the epidermis, and are here found either between or inside of epithelial cells. When they are found in the latter position they are surrounded by a vacuole. Karg in his often quoted article on "Carcinoma" (*Deutsch. Ztschr. Chir.*, vol. 34) describes a case of Paget's disease, and takes the inclusions in the epithelia to be leucocytes. He looks upon the latter as elements destined for the nutrition of the epithelial cells. Whatever may under certain conditions be the function of migrated leucocytes, in a case like the present one, a type of carcinoma, the leucocytes found in and among epithelia

appear to have quite a different function. I think that they are primarily attracted by chemotactic influences in order to exert a protecting phagocytic or germicidal action. Whether they are always equal to this task, or whether instead of destroying they are destroyed themselves, is of course another question.

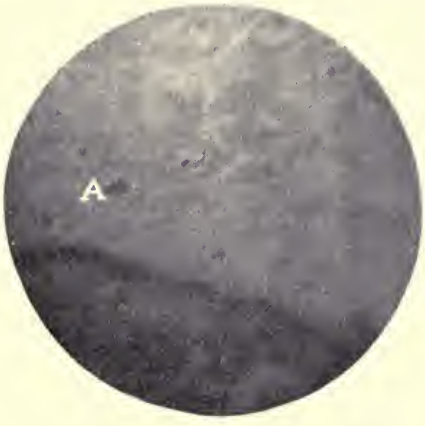

FIG. 4.—Layers of epithelia next to derma, at A; inclusion in an epithelial cell (x 1000).

Next to the stratum germinativum we find a stratum granulosum, the cells of which are densely filled with keratohyalin, but the epithelial cells containing this substance do not pass into the typical state of cornification. The keratohyalin granules it appears are discharged out of the cell body and are then found lying between the cells. The latter themselves become homogeneous, hyaline spheres of very large size; they are evidently edematous and in a condition of hydropic swelling. These spherical bodies, however, seem to be surrounded by a somewhat condensed tissue, a kind of membrane which is probably of a cornified character, since it stains violet with Gram's stain. In the derma the connective tissue fibers are pushed apart by a dense round-cell infiltration. In our case, like that described by Unna (Histo.-Pathol. d. Hautkrkh.), the infiltration in the papillary body, derma, and cutis consists in its great bulk of plasma cells, and among these plasma mast cells with their dense, coarse granulations; there are also found some polymorphonuclear leucocytes, lymphocytes, and transitory forms between the latter and plasma cells. Besides these cells there are seen a very large number of eosinophilic cells in the inflammatory area. So great is their number that I first mistrusted the correctness of the impression, but sections stained with eosin solutions (watery and glycerin

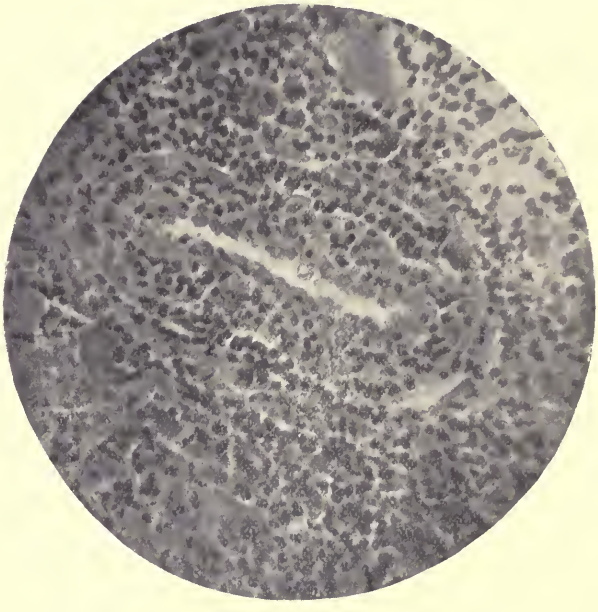

FIG. 5.—Dermal vessel wall densely infiltrated with plasma and eosinophilic cells (x 400).

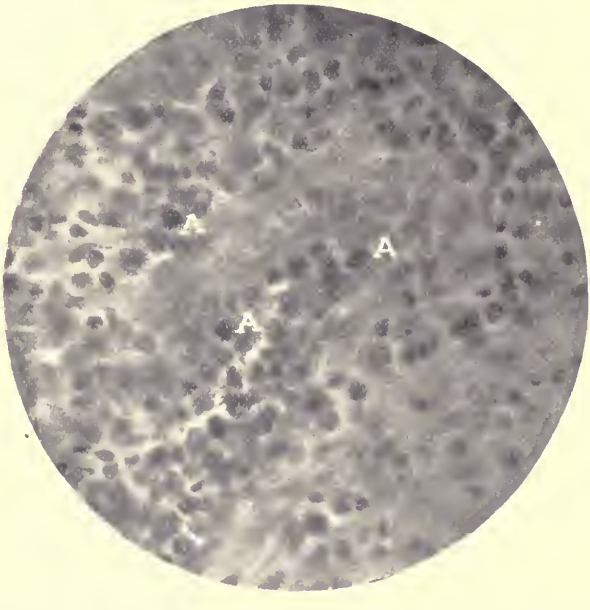

FIG. 6.—Derma: Numerous eosinophilic cells and plasma cells (x 1000).

solutions) exclusively showed that there could be no error as to the observation.

The cell infiltration is always densest around the vessels, and the vessel walls themselves frequently show a cellular infiltration with various cells, including plasma and eosinophilic cells. In the smaller vessels the enormous increase of leucocytes above the normal is very striking. Among the white cells found in the vessels are polymorphonuclear leucocytes, mast cells, lymphocytes, and forms intermediate between the latter and plasma cell and eosinophilic leucocytes. These cells frequently are found clinging to the inner side of the vessel wall; occasionally one sees a cell migrating through the wall, and among these also plasma cells and eosinophilic cells.

In one of the most recent contributions about plasma cells, by Krompecher (*Zeigler's Beitraege*, vol. 24), the author, who has been engaged in the study of these cells for three years, states that he has never seen a plasma cell with a karyokinetic figure. It must of necessity be a matter of great difficulty to recognize and identify a cell undergoing mitosis as a plasma cell. Plasma cells are generally characterized by an eccentric position of the nucleus, which as a rule is comparatively poor in chromatin. The latter is distributed peripherally, next to the nuclear membrane, and the whole nucleus is often surrounded by a light ring or halo. The cell protoplasm is quite abundant and stains markedly with the basic aniline stains. The cell body as a whole has a tendency to show square or irregular outlines, and the cell protoplasm is often irregularly serrated at the periphery, as if it were corroded ("angefressen"). Every one of the features characterizing a plasma cell must generally, as we should expect, be lost in karyokinesis. We know that during the process of indirect nuclear division of human cells, the latter, no matter to what specialized type they belong, assume quite a uniform appearance. On a plasma cell undergoing karyokinesis we would likewise expect to see a round cell with a central nucleus rich in chromatin, etc. In sections of the specimen under discussion there are found right in the midst of plasma cells, cells undergoing mitosis. The characteristic and typical figures seen are mostly monospirems and monasters. In one section there is found among plasma cells a large cell with small, scanty basophilic granules and a perfectly regular typical monaster, which however does not occupy the center of the cell, but is found at the periphery at one pole of the cell. At another place there is found a plasma mast cell with numerous coarse granules and a karyokinetic figure.

It would certainly be a matter of great interest to be able to

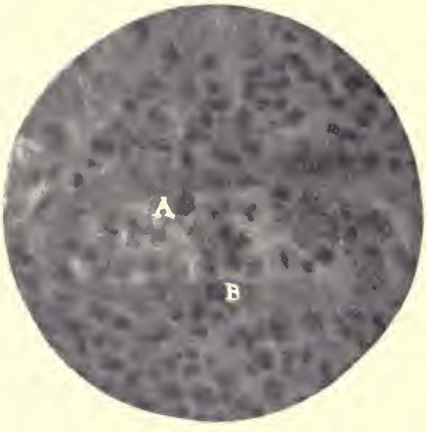

FIG. 7.—Derma: Small vessel with leucocytes of various types, including plasma cells, at A; eosinophilic cell in vessel lumen, at B; eosinophilic cell migrating through vessel wall.

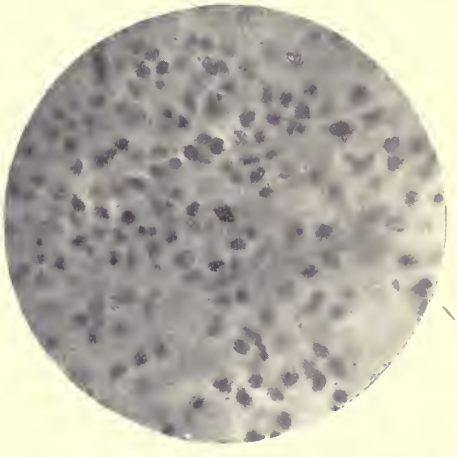

FIG. 8.—Derma: Plasma cells; in the center of the field a cell with a nuclear figure (monaster), not in the center of the cell, but at its periphery.

demonstrate beyond a doubt that plasma cells which occupy such a prominent place in inflammatory changes were able to multiply in the tissues in which they are found. It appears now that the plasma cells are derivatives of lymphoid cells, circulating in the blood. Since it is also claimed, and it seems with some good reason, that plasma cells change into fusiform connective tissue cells and finally into connective tissue fibers, we would then have a complete cycle, starting with the lymphocyte or plasma cell migrating out of the vessel into the tissue, being able to here proliferate by karyokinesis and becoming finally a connective tissue fiber.

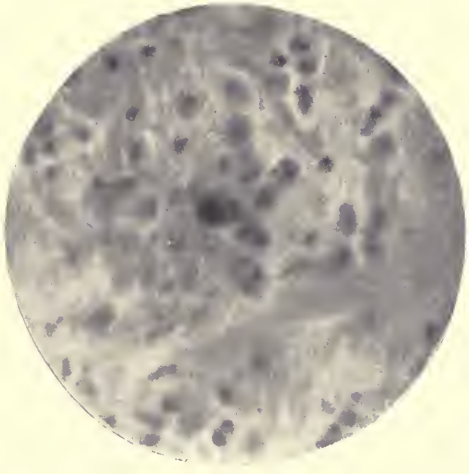

FIG. 9.—Derma: Near the center plasma mast cell, with a karyokinetic figure.

Malignant papillary dermatitis or Paget's disease certainly forms an excellent object for the study of the histopathology of inflammation and of the now much spoken of plasma cells, since they do occur in this affection in large numbers. So numerous are they that Unna in describing the case he observed spoke of the "plasmoma" formed in the derma. It is, however, quite questionable whether the name malignant papillary dermatitis for this disease is a happy one. It appears to me that this disease is a true type of carcinoma from the start, one however of a mild degree of malignancy, the extensive spreading of which is for a long time prevented by the protecting wall of cellular infiltration which is formed in the derma. The histologic changes in the latter I think are not to be looked upon as the primary pathologic factor, but as a beneficial protecting reaction. Hence it is hardly proper to derive from the condition in the derma the name for a disease the true etiological factor of which must be looked for in the epidermis.

A CLINICAL LECTURE IN NEUROLOGY.

BY HAROLD N. MOYER, M.D.,
Assistant Professor of Medicine, Rush Medical College, Chicago.

HYSTERIA.

This patient is 24 years of age. She appears to be in fair health, her color is good, and she is rather fleshy. About one year ago, while mounting a street-car, she fell and was dragged a short distance. She regained her feet and took her seat in the car. Immediately her right leg began to tremble and she spat blood. This was not coughed or vomited, but, as she says, "just came into her mouth." The quantity was sufficient to saturate three handkerchiefs. The following morning the abdomen was somewhat distended, but she was able to go out. During the first week it is stated that the discharges from the bowels were bloody, and these continued for two or three months. There was great pain during the night. About eight months ago she noted that her legs would suddenly give way while standing or walking. She never fell, but was always able to catch herself. About three months ago she attempted to rise from the chair in which she was sitting, when it was noted that she had lost power in her left arm. The same night she became paralytic in all the extremities, including speech, sight, and hearing; this passed off before morning, with the exception of the paralysis of the left arm, which has continued until the present time. These attacks of general paralysis were repeated on two occasions, the last time being most severe; for two days she lost speech and hearing, and it was five days before she could walk. Two months ago, while reading a paper, her vision suddenly became dim, a condition which deepened into nearly total blindness of the left eye, there remaining only a perception of light. The right eye regained a certain amount of vision, but she is unable to read ordinary print.

Prior to this accident she states that her health was good and that she was not nervous. She has had no serious illness. There has been no paralytic trouble of the bladder or bowels, and only on one occasion, during the attacks of general paralysis, was there incontinence of urine. She says that her sleep is much broken because of backache. Her appetite is poor; she lives almost wholly on malted milk. She claims to have lost some weight during the past year.

The history alone of this case is sufficient to make a diagnosis of

hysteria; the attacks of sudden paralysis, its rapid disappearance, the amblyopia, and the general character of the case are sufficient to place it among hysterias. We shall, however, especially direct our attention to the examination of the various affected organs. With the left eye she says she does not see at all; she can only distinguish when looking at the window or wall, there being only a perception of light. Testing her with Snellen's red and green glasses, we find that she does see with the left eye. If there were no other symptoms of hysteria present we should almost conclude that the patient was attempting to deceive us, as she reads letters which it would be absolutely impossible for her to see with the left eye. The field of vision of the right eye is very much narrowed, there being a sinking in of the temporal side to such an extent as to suggest hemianopsia. Vision in this eye is reduced to about $\frac{10}{20}$, and it is nearly central—that is, she only sees objects that are almost directly in front of her. In looking closely at an object the eyes are turned so as to suggest a squint; this is due to the impairment of the nasal half of the retina, and occurs in that part of the visual field which we said was so irregular in its outline as to suggest hemianopsia, and is due to her effort to bring the image upon a sensitive part of the retina.

The pupils react to light and are of equal size; the eye grounds are normal. The color perception of the right eye is normal, but an inversion of the color perception in the field cannot be determined, owing to the fact that we have no perimeter to measure the exact range, our tests being made by holding up a triangular rod the faces of which are colored respectively white, red, and blue.

She claims that she hears nothing with the left ear. This is confirmed by testing with the tuning-fork, and is true of both bone and aerial conduction. She hears the loudest tones of a Galton whistle, but nothing below this is heard in the left ear. Hearing in the right ear is of normal acuity, excepting for very low tones, nothing below 128 vibrations being distinguished. The ear drums are normally movable, and the Eustachian tubes are unobstructed; the naso-pharynx is quite normal. I know of no explanation of this hysterical deafness, for it is of the same character as the amaurosis. The peculiarity which enables her to distinguish sounds of the highest possible pitch and nothing below it is not susceptible of explanation. While her right ear is regarded as normal, her range of hearing for low tones is by no means as great as it should be.

We adjust the phonendoscope, placing a tube in each ear, blindfold the patient, and touch a tuning-fork to the tympanum of the instrument. Of course, with both tubes in position she hears the

fork, and as we detach the left tube without her knowledge she still hears it. Again, detaching the right tube without her knowledge, she does not hear it. So far as this test goes, it would show that she does not hear with the left ear, and this is one of the tests that have been advanced to detect feigned loss of hearing. We doubt the accuracy of this test, as it is possible for people to distinguish sounds coming through a particular ear, so that a malingerer could easily answer that a sound perceived in the left ear was not heard at all.

The sense of smell is completely abolished on the left side, which was a fact that she did not know until after her attention was called to it. In questioning her she stated that her sense of smell was intact, as was the sense of taste. On testing the latter, it is found of normal acuity on both sides of the tongue. Tactile pain and temperature sense is found to be normal, excepting the left arm and left side of the body, including the front and back as far as the middle line, extending from the margin of the lower jaw and hair above to the tenth rib below. Over the whole of this region there is a total loss of pain, temperature, and tactile sense. I would especially direct your attention to the fact that the lower line of anesthesia presents the same level behind as in front, and that above it is accurately delimited by the margin of the hair, which does not correspond to the distribution of any nerves.

The left arm is completely paralyzed; it hangs limp and motionless. It is about the same size as its fellow, and there are no signs of wasting in any of the muscles. The electrical reaction of both nerve and muscle in this arm is normal, the same quantitative reaction as is obtained on the opposite side. The galvanic reaction gives cathodal closure before the anodal. The knee-jerks are present, but are apparently slight. There is no swaying with the eyes closed.

It will be seen that this case presents a peculiar hysterical anesthesia, namely, a loss of pain, tactile, and temperature sensibility not following the distribution of the nerves. There is complete paralysis of one arm, of three months' duration, not accompanied by alteration of electrical reactions or appreciable atrophy; sudden and complete loss of vision in one eye, and a narrowing of the fields of vision in the other, without structural changes in the retina; a loss of hearing that is almost certainly of hysterical origin, because of its sudden onset; and absence of appreciable structural change.

We have presented the case because of the unusual completeness of the symptoms and their remarkable range. It is unusual to have amaurosis, loss of hearing, anesthesia, and monoplegia in the same

patient. The mental condition shows the characteristic instability of hysteria, though there has been a freedom from the convulsive seizures, termed hystero-epilepsy, which so commonly accompany this condition.

EXOPHTHALMIC GOITRE.

This man is 26 years old, and until about three years ago he was quite well. At that time he became nervous, which condition greatly increased, but not sufficiently to interfere with his work. It is difficult for him to describe what he means by this nervousness. He says there was no tremor, nor did he become easily fatigued, but he did not sleep so well and showed an increasing irritability. Shortly after the development of this nervousness he states that his eyes began to trouble him. There was a slight feeling of pressure and sometimes what he describes as a sense of burning. At times the eyes felt as though they were pressed outward, though at no time during the past three years has he noticed that there was marked projection of the eyeballs. He has been carefully examined by a competent ophthalmologist, who says there is no appreciable refractive error, or at least none that needs attention, nor are there any changes in the eye grounds. His appetite is good, though the digestion is somewhat impaired. Examination shows a considerable enlargement of the thyroid glands. The right lobe is somewhat larger than the left, and there is an appreciable increase in the size of the isthmus. The pulsations of the right carotid are greatly exaggerated; they can be felt throughout the whole course of the artery in the neck and along the margin of the sternocleidomastoid muscle, and when the finger is placed over the artery the movement can be seen as well as felt. The left carotid gives a normal pulsation. The heart sounds are normal, but their volume is much increased; this, however, applies equally to both sounds. The heart is of about normal size. The first and second sounds, which have a normal rhythm, are heard loudest not at the apex, but about two inches to the right of it, near the margin of the sternum at the lower border of the heart. The heart's action is normal in frequency and shows the usual difference of about eight or ten beats between the sitting and standing position; it is not markedly exaggerated by exercise.

Our reasons for regarding this as a case of exophthalmic goitre are founded on the increased pulsation in the right carotid and the accentuation of the heart sounds to the right of the apex. This latter symptom we do not remember to have seen mentioned in

connection with this disorder, but we have noted it with one other case. In this disease also there is frequently increase in the pulsation of the carotids. In all of those which we have seen the right presented the greater pulsation. The major symptoms of this disease are tachycardia, pulsating arteries, goitre, exophthalmus, and tremor. The minor symptoms are nervousness, sweating, insomnia, lessened electrical resistance, diminished respiratory expansion, subjective sensations of heat, diarrhea, and polyuria. Of the major symptoms, he has goitre and pulsating arteries. He has no exophthalmus, though there are certain subjective symptoms connected with the eyes. The only minor symptom is the nervousness. There is no diminished respiratory expansion, and the lessened electrical resistance which is sometimes present in these cases is simply due to the vasomotor dilatation of the skin and the moisture due to the sweating, so it is really not a primary symptom.

Taking the case as a whole, we think that the diagnosis of exophthalmic goitre is fully substantiated.

The most important thing in the treatment of these cases is rest. If we had this patient fully under our control we should put him to bed for at least a month, or perhaps two. Many cases, however, will not consent to this treatment, as they insist upon being up and attending to their duties. In our experience, next to rest, galvanism is the most important. The technique we have followed is that recommended by Dana: positive pole on back of neck, negative drawn along the course of the vagi in the neck, each side two minutes; same with positive pole placed under the ear, one minute; negative pole over thyroid, two minutes; negative over cardiac region, one minute. The strength of current to be from two to six milliamperes. In this case, as there is no tachycardia, none of the usual remedies for controlling the action of the heart will be given.

TWO CASES OF PELIOSIS RHEUMATICA.

BY CHARLES J. ALDRICH, M.D.,

Lecturer on Clinical Neurology, College of Physicians and Surgeons; Visiting Physician to Cleveland General Hospital; Neurologist to Cleveland City and Cleveland General Hospitals.

Since Schoenlein described a type of purpura hæmorrhagica which he believed to be due to rheumatism, there has been considerable discussion as to the right of that type, which he named "peliosis rheumatica," to occupy an independent position in nosology. The writer has reported one case which was undeniably rheumatic purpura,[1] and he believes the following cases to be worthy of consideration in this interesting discussion:

Case 1.—G. H——; married; white male, aged 36 years; English born; occupation, driver. He has a rheumatic but otherwise excellent family history. He had the usual children's diseases; also typhoid at 12; tonsillitis several times; lumbago and rheumatic pains frequently; otherwise very healthy and active. Denies venereal infection; uses tobacco moderately and beer still more so.

During the past winter he had pains in and about the joints and muscles of his legs. His bowels have inclined to constipation, and urination has been more frequent than formerly. Three weeks ago he became worse and had much aching pain in the legs, worse on the left side. His tongue was coated, and he had piles, which bled. One week ago, after a day of severe pain, he noticed, on retiring, a few red spots on the outside of his legs and about the knees. The next morning the spots were increased in number, and his right wrist was swollen and painful. Both knees were painful and swollen, and he had a chill followed by headache and fever. He had no other hemorrhages than from the piles.

Examination revealed no thoracic or abdominal disease. His vascular system seemed to be normal; fundus oculi normal; urine normal to chemical and microscopical examination; temperature 100.5° F.; pulse 88; tongue furred; bowels constipated; appetite poor. His feet, legs, and thighs were covered with typical purpuric spots of varying sizes and shapes. About the hips were a very few spots, but on the trunk, arms, neck, and face not a spot could be discovered. Sodium salicylate and alkalies relieved his pain, and the hemorrhages are slowly fading.

Case 2.—Mrs. R——, white female, aged 24; United States born. Entered Cleveland General Hospital July 1, 1898. Father

[1] *International Medical Magazine*, Jan. 15, 1898.

is alive at 64, in good health, but has suffered much from rheumatism, and has a valvular heart lesion. Mother died at 50 of pneumonia. She never had rheumatism. Had two sisters, one of whom died of pneumonia; the other is healthy, but suffers often from tonsillitis.

The patient had most of the diseases of childhood; was not a strong child until after 10. Menstruated at 15; was regular after six months. Married at 18; two children born, two years apart, both alive and healthy. After this she had a number of induced abortions; no serious trouble resulted from these. Soon after the last abortion her menstruation became scanty and irregular, and one year later, after an attack of measles, disappeared, seven months previous to her entrance to the hospital. For years she has had many severe attacks of quinsy. During the past year she has had rheumatism in the joints, but without swelling. One year ago she was in a hospital for general weakness, and pain about the heart and in the joints. She has an enlarged thyroid.

The last of June, ten years ago, after suffering much pain in the joints and about the heart, she noticed one large bright-red spot over the left inner malleolus. After this with one exception she has been similarly attacked about the same time each year. The nature of each of these attacks is well described by the notes made by House Physician Swigart:

"About five days ago, without apparent cause, she began to have pain in the elbow-, knee-, and ankle-joints, and in the precordial region. The ankles were swollen and very painful. She had a chill and suffered from nausea, and felt greatly prostrated.

"On entrance to the hospital she had a temperature of 100.2° F. and a pulse of 70. A systolic murmur at the apex was heard, which was transmitted toward the axilla. The pulse was intermittent and arrhythmic—evidently mitral insufficiency. Her elbows and ankles were swollen and painful. About midway between the ankles and knees, and particularly about the ankles on both limbs, were several typical hemorrhagic spots varying in size from that of a ten-cent piece to that of an old-fashioned copper penny. They were no longer bright, but were evidently receding. The patient states that they were bright red when first noticed."

The urine was acid, rather scanty, with a specific gravity of 1016; no sugar nor albumin. She was ordered calomel, alkalies, and salicylate of soda. Her temperature gradually rose, until on the evening of July 5 it registered 102° F., after which it went

down to 97.6° F., where it remained until she left the hospital. The spots were still visible.

Since writing the above history I have seen her twice. Her heart is better, but about January 1, 1899, she had a sharp attack of rheumatism that involved both ankles and knees. The purpuric eruption was markedly grouped about these joints, and quickly disappeared with the joint symptoms under salicylate of soda.

It may be of interest to append the following digest and references from the *International Medical Magazine* of January 15, 1898, which appeared in the report of the case referred to in the opening paragraph:

"According to Kaposi[1] a succession of relapses extending over some time is accompanied by nephritis or an organic heart lesion; he has reported two cases that gradually developed aortic insufficiency. Kinnicutt,[2] Mollière,[3] and others have detected cardiac murmurs during the course of peliosis rheumatica. Oliver[4] believes in the association of rheumatic purpura and ulcerative endocarditis; and the writer has twice observed purpuric eruptions about the chest in ulcerative endocarditis, although no clear history of rheumatic complication was obtainable in either case.

"On the other hand, Immermann,[5] Atkinson,[6] Osler,[7] and others assert that this form of purpura is not complicated by endocarditis; and this case has been under my care for nearly four years without a sign of cardiac disturbance, and repeated search has failed to discover casts, albumin, or blood in the urine.

"Schoenlein declared the disease to be hemorrhagic in character, accompanied by extravasations into the cutaneous layers without internal hemorrhages; and as before remarked this case at no time presented evidence of internal hemorrhage.

"Kaposi[8] and Neuman have observed cases that manifested a pronounced tendency to recur annually, spring and autumn being the usual seasons for the outbreaks. The case reported certainly shows this tendency. Kaposi[9] mentions that severe bleeding from the gums has been observed, and Scheby-Bush[10] says that bleeding from the mucous membranes occasionally occurs.

[1] *Hautkrankheiten*, 1889, p. 277.
[2] Kinnicutt: *Archives of Dermatol.*, vol. i, p. 193, 1874-5.
[3] Mollière: *Ann. de Dermatol.*, v, p. 44.
[4] Oliver: *Internat. Clinics*, January, 1892, p. 12.
[5] Immermann: Ziemssen's Cyc. of the Practice of Med., vol. xvii, p. 247.
[6] Atkinson: Pepper's System of Med., vol. ii, p. 189.
[7] Osler: Handbook of Practice, p. 345.
[8] Kaposi: *loc. cit.*
[9] Kaposi: *loc. cit.*
[10] Scheby-Bush: *Deutsche Arch. f. Med.*, B. xiv, p. 490.

"The arguments offered for the rheumatic origin of this case are: the universal association with joint symptoms; the occurrence of sore throat; excited by conditions of weather, seasons of the year, and amount of exposure (all recognized as exciting causes of rheumatism); no indication of other infection; and the prompt relief obtained by the administration of salicylate of soda."

744 PROSPECT.

BLOOD EXAMINATIONS IN THE DIAGNOSIS, PROGNOSIS, AND TREATMENT OF PNEUMONIA.

BY HAMILTON FISH, M.D., OURAY, COLO.

The names of many diseases, and among the number pneumonia, will probably never change, as long and common usage has given them a place in the interpretation of the laity which would be difficult to overcome generally; but modern science has, in a number of instances, contradicted the phraseology of the older terminology.

Pneumonia is not a disease of the lungs alone, as was formerly and is to-day taught to some extent, but is an acute specific infectious disease characterized by a local pulmonary lesion. It is an acute general malady produced by an infectious agent, and while having marked pulmonary symptoms with pathological changes in the lung tissue, it is in reality an acute general septicemic disease. The infectious nature of pneumonia has long been recognized.

From the writings of Thucydides it is evident that it played no small part in the plagues of the olden times. Latterly it has been known to occur epidemically in jails, in barracks, in the poorer tenement houses, or under the conditions where large numbers of people are crowded together in ill-ventilated and unsanitary structures. One attack does not produce immunity, and as many as twenty-eight distinct attacks of the disease have occurred in the same individual.

Bacteriologists and hematologists are prying into Nature's secrets with such successful results that the time is not far distant when the diagnosis, prognosis, and treatment of many diseases will be founded upon hematological and bacteriological examinations. That the diagnosis of pneumonia has been made in many instances when the disease did not exist is unquestionable, from the fact that the physical signs and manifestations of true pneumonia may be produced by any of the microorganisms capable of causing an inflammatory condition, or by a simple non-inflammatory congestion of the lung tissue. The names of several investigators, notably Sternberg, Frankel, Weichselbaum, Talmon, and Gameleia, have done much to place our knowledge upon a secure foundation, and it is now generally believed that the pneumococcus is the cause of acute croupous pneumonia. In all cases of true pneumonia this organism is present and can be demonstrated in the saliva, expectoration, and sometimes in the blood. Some cases simulate a true pneumonia in the physical signs; but if after repeated and careful hematological and bacteriological examinations the diplococcus of pneumonia is not found, the case should not be included among the pneumonias.

While the diplococcus pneumoniæ is found in other diseases — and this is not remarkable when we consider that the organism is frequently found in the mouths of healthy persons, and that by respiration it is carried to the lungs, where free access to the circulation is obtained — it cannot be considered as the direct cause of the malady unless obtained in pure culture, or in excess of other organisms, in which case the disease is one of pneumonia vera (if we continue to call the disease produced by this organism pneumonia), with the local manifestations elsewhere than in the lungs. This is particularly true of meningitis irrespective of, or subsequent to, an attack of pulmonary pneumonia. Here we frequently have a mixed infection, the diplococcus pneumoniæ exerting its pathogenic influence upon a soil rendered suitable by the previous actions of the inflammation-producing microorganisms.

In the development of the diplococcus pneumoniæ a toxemia is produced, and while the local manifestations of a pulmonary pneumonia may be produced by other causes, the general systemic disturbances of this disease are caused alone by the pneumococcus. As this organism is frequently found in the mouths and probably in other locations in perfectly healthy individuals, what are the causes that predispose to its active manifestation within our bodies? Any cause acting upon the general economy, or upon our so-called constitution, in such a manner as to lower its vitality, together with a *locus minoris resistentiæ* and an infection-atrium to pathogenic microorganisms, supplies a suitable soil for the production of their pathogenic properties.

Excessive indulgence in alcohol and exposure to cold are the two most potent factors in the production of pneumonia, as well as in the production of many other infectious diseases. These causes probably account for the great prevalence of this disease in mining districts at high altitudes, where more deaths are attributed to it than to all other diseases combined.

Miners, few of whom are total abstainers, have an arduous occupation, mostly underground, and emerge overheated and perspiring into the cool and sometimes cold atmosphere of the higher altitudes. The disease is very fatal among miners, and it is, as yet, undetermined whether the microorganism has an increased virulence, or the reactionary or phagocytic powers of the tissues are lessened by a rarefied atmosphere.[1]

[1] Later investigations have shown that the average ratio of the white to the red corpuscles is as 1:1700 at an elevation of 12,000 feet, in healthy individuals. This is a relative and absolute decrease, and undoubtedly explains the cause of the high mortality and the number of rapidly fatal cases.

The initial chill is frequently the first indication of the onset of the disease, although there must be a period of incubation varying in the length of time taken by the organism to establish a foothold and to eliminate its toxic products. This time varies according to the virulence of the organism, and according to the resistance with which it meets.

In few diseases do we see such an energetic and apparently determined effort to gain the mastery as is manifested in pneumonia by the infection on the one hand, and by the severity of the chill and the rapid rise of temperature on the other. If resistance can be maintained sufficiently long against the invasion, the toxin is apparently neutralized within itself, as is shown by the crisis, at which there is a subsidence of the toxic symptoms almost as quickly as the original effect was produced, after which the patient recovers slowly from the trying ordeal of vital combat for supremacy.

The idea that the heart is unduly influenced by an increased amount of blood forced back upon it, and that extra exertion of the heart muscle is necessary to force the blood through the congested or consolidated lung area, cannot longer be entertained. The compensatory ability of the heart and the elasticity of the internal veins will meet this emergency. The systemic disturbances are out of all proportion to the area of lung involvement, which rarely, if ever, exceeds the residual air capacity of the respiratory organs. This is believed to show conclusively that the labored heart is due to the direct poisonous effect of the pneumonic toxin upon the heart muscle or the nervous mechanism governing it.

In the blood we have fairly accurate diagnostic and prognostic indications, and I believe that in it will be found the therapeutic indications.

An examination of a drop of blood from a patient suffering from true pneumonia shows that the specific gravity is increased; that there is decreased alkalinity or a slightly acid reaction; a condition of poikilocytosis; a leucocytosis of the polynuclear neutrophiles and sometimes the diplococcus pneumoniæ. The specific gravity shows gross pathological changes in this tissue. The reaction of the blood seriously hampers the phagocytic powers of the leucocytes, and in grave cases this action is apparently entirely abolished through the production of overpowering quantities of the toxic substance. Poikilocytosis, while not invariably seen, is of some prognostic value in showing the effects of the toxin upon the red cells.

Regarding the degree of leucocytosis, Cabot says: "The cases appear to fall into the following groups:

"1. Mild infection, vigorous reaction—slight leucocytosis.

"2. Severe or moderate infection, vigorous reaction—marked leucocytosis.

"3. Severe infection, feeble reaction—no leucocytosis.

"(*a*) The cases in class one all recover, but they are very few in number; (*b*) those in class two, which includes over nine-tenths of all cases, may or may not recover, according as the fight between patient and disease comes out one way or the other; (*c*) class three almost invariably die; there is not sufficient of a struggle to raise the leucocyte count."[1]

Prognosis is largely predicated on the number of the leucocytes, with the exception of the second class, in which it is doubtful, depending upon the resisting power of the patient and virulence of the disease.

Whether the prevailing method of treatment is productive of much good is doubtful, as recovery is largely dependent upon the power of reaction possessed by the individual patient. In the treatment of this disease we should aim to hasten the crisis; to increase the number and phagocytic powers of the leucocytes; and, if possible, neutralize the pneumonic toxin.

Most observers claim that the production of an artificial leucocytosis is of no value. In certain cases of mild or moderate infection an artificial leucocytosis is believed to be of value. In those severe cases where the toxin is set free in large amounts, an artificial leucocytosis cannot be productive of good so long as this poisonous element remains unneutralized, as the cause which acted upon the original leucocytes is still present and destroys the vitality of the new-born white cells before they are fairly launched.

In the days of our forefathers failure to bleed in pneumonia was considered an act of gross negligence verging closely on criminal practice upon the part of the medical attendant. A practice of such universal adoption must have been productive of good results in many cases. We know that the life of the diplococcus pneumoniæ is comparatively short; that it pours forth its toxin early and in amounts quickly decisive if no resistance, or if but a feeble one, is offered. There cannot be a gradual production of this substance to any extent, from the fact of its own neutralization within a short time. The initial dose is a large one and it destroys life quickly, or else the vital resistance is sufficient to carry the patient through the illness.

We can now theorize that the bleeding in pneumonia, as practiced by the older physicians, abstracted some of the toxin from the system

[1] Cabot: Clinical Examination of the Blood, 1898.

and the remainder became less concentrated. In this manner the virulence of the toxin remaining could be more readily overcome by the new blood formation.

In modern times, when by the exercise of our knowledge of antiseptics we are enabled to exclude danger from the operation of phlebotomy, it were well if the old practice would again become popular. There is, and probably will remain, in some circles, a feeling of repugnance or of fear toward this procedure; hence we must obtain like results in other ways. Diaphoresis and purgation decrease the watery element of the blood in which the toxin is contained, and by its withdrawal practically the same result is obtained as by bleeding. In this manner we leave, however, the solid elements of the blood behind, and as they are presumably more or less saturated with the toxin, we cannot trust to the replenishing of the watery element from the tissues, which are also tainted with the pneumonic poison. We therefore introduce intravenously or subcutaneously a sufficient amount of sterilized normal salt solution, which is readily taken up by the circulation. This not only replenishes the amount of fluid withdrawn from the blood with an uncontaminated solution acceptable to the system, but it influences favorably the blood reaction, gives a stimulus to the enfeebled leucocytes, and supplies a suitable medium for the growth and exertion of the phagocytic powers of the young white cells.

The salutary effect upon the heart and respiration of these injections is shown at once. Diaphoresis is produced by a dry or moist hot pack and the internal administration of hot drinks. Pilocarpine may be employed in the earlier stages of the disease before the heart has become poisoned by the toxin. It should be cautiously administered in doses proportionate to the condition of the heart and to the effect desired. It should be given hypodermically, and combined or followed, if occasion requires, with a cardiac stimulant.

Leucocytosis is produced and maintained in sufficient degree by hypodermic injections of nuclein according to the formula of Drs. Vaughn and McClintock. It must be remembered that an artificial leucocytosis is only productive of good in the severer cases when there is a partial neutralization of the toxin and an approximately normal blood reaction. This treatment can be regulated only by frequent blood examinations, which should be made every four to six hours early in the disease.[1] The results of these examinations

[1] In private practice the physician must be guided by the general condition of the patient instead of by the instrumental examinations. Salt solution can be made in the household teakettle by the addition of about a drachm of common salt to the pint of water. This is boiled for several minutes, when the solution is poured into a chemically sterilized fountain syringe, and is, upon reaching the proper temperature, ready for use. The operative procedures should, of course, be conducted under the most rigid antiseptic precautions.

indicate the dose and frequency with which the nuclein should be administered, as well as a repetition of the neutralizing process.

Adami, of Montreal, has recently demonstrated that the liver has certain bactericidal properties; hence it is desirable that this organ should functionate at its best. Purgation is produced by a mercurial, preferably calomel. Frequently repeated doses of some saline cathartic are continued until sufficient hydrocatharsis has been produced.

Internal medication is directed chiefly toward the inflammation of the lung with the ammonia preparations. Alcohol is administered in limited quantities, for its strengthening and supportive effect. The chest is rubbed frequently with a solution of turpentine and olive oil for its counter-irritant effect, and is enveloped in a cotton jacket for protection and for the mental influence it has on the patient. It is to be borne in mind that the systemic disturbance is a distinct disease apart from the local manifestations and should be treated separately. Pyrexia should be treated by cold baths, which favor a leucocytosis, rather than by antipyretics, as Hare has shown that the latter check this process.

In the light of the above facts the idea that pneumonia is a self-limited disease is erroneous, because a so-called crisis frequently occurs soon after the commencement of the treatment described in this paper, and because convalescence is frequently established within from twelve to twenty-four hours.

WHAT BECAME OF THE DAUPHIN LOUIS XVII.?—A STUDY IN DENTAL JURISPRUDENCE.

BY EUGENE S. TALBOT, M.D., D.D.S.,
Fellow of the Chicago Academy of Medicine.

Among the many interesting historic problems connected with the French Revolution, that of the death of the Dauphin Louis XVII. stands preeminent. The Dauphin was placed in the Temple under charge of Simon, the famous jailer of that prison. Under Simon's charge he remained until January, 1794, when Simon himself fell under suspicion as one of the adherents of Robespierre, and was executed toward the end of July the same year. From January until July the prison remained without a chief official. It would have been perfectly possible to have substituted another youth for the Dauphin. There were three parties interested in this substitution—the Count of Provence (who afterwards became Louis XVIII.), the Count of Artois (who afterwards became Charles X.), and the Duke of Orleans (who afterwards became King Louis Phillippe). These three parties were certainly to be benefited by the disappearance of the Dauphin. Indeed, as Dr. Cabanes points out, they had circulated ere the downfall of the monarchy imputations against the legitimacy of all the children of Marie Antoinette, based upon that early semi-impotency of Louis XVI., which resulted from his adherent prepuce.

Simon (who was secretly much attached to the Dauphin, although publicly ostentatiously brutal) left the Dauphin in perfect health in January, 1794. A year later it was necessary to call Dr. Desault (a secret royalist) to attend him. He found a very much emaciated, scrofulous youth, whose person was unknown to him, and as to whose identity he had no direct evidence. The Dauphin, according to the prison reports, died June 9, 1795, about a month after Dr. Desault's visits. The Committee of Public Safety instituted an inquiry into the death, and selected four physicians, Drs. Pelletan, Dumangin, Lassus, and Jeanroy, to make the autopsy. These physicians appear to have had some doubt as to the identity of the body, since in the official report they state that they had made an autopsy upon a body stated to them to be that of the Dauphin (Louis XVII.) by the officials of the Temple. The body bore evidences of prolonged and decided scrofula.

According to Dr. Amoedo, of Paris (from whose work are derived many of the facts about to be detailed), the body was interred at

7 P.M., June 10, 1795, in St. Margaret's Cemetery. In accordance with a royal ordinance (issued at the instance of Chateaubriand) a monument to the young Prince was ordered after the Restoration. The resultant excavations in 1816 failed to find the casket containing the remains of the Dauphin. A host of pretenders arose, among whom may be named Mathurin, Bruneau, Richemont, and Naundorff. The claims of all were rejected by the Bourbons when they came to the throne, and by Louis Phillippe, who succeeded them. Madam Simon (who was much attached to the Dauphin) firmly believed that her young charge did not die in the Temple, but was carried out in a basket of clothes and replaced by another child. She claimed that when she was an inmate of the Bicêtre as an incurable in 1806, the Dauphin visited her.

Just ere the close of the reign of Louis Phillippe a new impetus was given the problem as to the death of the Dauphin by an accidental discovery in St. Margaret's Cemetery. In erecting a building for church use near the left pillar of the side gate a leaden casket was discovered containing a skeleton. This was examined by Dr. Micent. In his report to the pastor of St. Margaret's Church he states that the skeleton was that of a child, and according to weakness or slenderness of the bones the subject must have been of a debilitated constitution or have lived under bad hygienic conditions. In his opinion the skeleton was without doubt that of Louis XVII. Dr. Récamier (who examined the skeleton) was of opinion that the body was that of a subject more than 15 years old. The deceased Dauphin had barely attained the age of 11. Dr. Récamier stated that the jaws contained eight molars, two canines, and four incisors each. The subject, therefore, had twenty-eight teeth erupted. The wisdom teeth were visible, and one was about to erupt. The teeth were very large in proportion to the jaw. The casket and skeleton were reinterred, but in such a manner that they could not be found. Later George Laggar (an advocate of the claims of the Naundorffs) insisted that the skeleton discovered in 1846 was not that of Louis XVII., and concluded therefore that the Dauphin did not die in the Temple. He demanded and obtained permission to excavate the cemetery anew. A casket was discovered on which was graven "L. XVII.," from which it was believed that the casket contained the remains of the Dauphin. Drs. Backer and Bilhaut after a careful and exact examination reported as follows as to the remains:

"The subject is a male who has attained at least the age of 14 years and may be older. The state of the epiphyses of the humerus, the femur, the tibia, as well as the examination of the skull, permits

this conclusion. The state of the jaws, their development and their separation, and the dental system corroborate this opinion. The upper jaw indicates the normal place of fourteen teeth. The left incisor is wanting, as well as the first great molar. The teeth are irregular. The two median incisors project in front. The second molar impinges considerably on the internal border of the dental arch. The wisdom teeth are developed, but not erupted. The two last left molars are carious, as also is the sixth-year molar. The two left incisors are also carious. The lower jaw is markedly developed and very thick. This thickness reaches more than a centimeter at the root of the last molar. The width between the two condyles of the lower jaw is eight centimeters. The size of the bone measurement, being made from the external part of one condyle to another, is twelve centimeters. Thirteen well developed teeth exist in the lower jaw. The sixth-year molar on the right side had been extracted a long time before death. That following it is in advance, but is separated from that preceding it by a much larger osseous interval than for any of the other teeth. One tooth is carious. The wisdom teeth are still in the alveolus. From the development of the head the subject must have been at least 14 years old. The upper jaw is particularly interesting because of the evolution of the teeth and the possibility of finding therein elements of diagnosis of the age of the subject. At each extremity of the upper dental arch is found the alveolus of the wisdom tooth largely gaping. One of these teeth was found in the casket; it presents the following characteristics: Its crown is complete to the neck. Its evolution is almost completed. In the center of the root the tooth is sharply separated into a soft border. Its length is eleven millimeters. These jaws carry to sixteen the number of teeth found in the upper jaw. The lower jaw has attained a great development beyond that usually found in young subjects. The removal of a molar and the obliteration of its alveolus had striking consequences for the tooth which follows it. This was the right wisdom tooth, which, less hindered in its evolution, is further advanced than the left. The upper and lower jaws belong to the same subject."

These results led to considerable discussion, both among historians and anthropologists. In consequence the Paris Anthropologic Society deputed Drs. Manouvrier and Magitot to examine the remains. In their opinion the skeleton belonged to an individual at least 16 years of age, with a great probability that the age was still more advanced. The two jaws they found were of relatively feeble dimensions. The upper jaw in particular was narrow and

had been affected by a certain degree of atresia, which had caused vicious implantation of corresponding teeth. This atresia had another effect, to reverse the ordinary relations of the upper and lower jaws. The teeth were not all in place, but the alveoli remained to permit them to be reconstituted. There were no milk teeth. All the teeth were permanent. The permanent teeth had all erupted except the wisdom teeth. The incisors were of moderate dimensions and normal form, with exception of the lateral, which were somewhat atrophic. The canines were normal but badly placed in the upper jaw. The premolars were normal in type and place, except that the two second premolars projected. The first molars were in place, but the right inferior one was absent, and had been extracted surgically long enough after its eruption to enable the cavity resultant to be filled by bone. In the opinion of the reporters this extraction had taken place towards eight or nine years. The time which had elapsed since this extraction, and which had filled the cavity, would bring the subject up to the age of 16. The wisdom teeth were all four evidently present. In all probability they were still covered with mucous membrane, but their eruption was near at hand, since the crowns were entirely formed and the roots were already several millimeters in length. This last fact tends to show that the age of the subject must have been more than 18 years, as the first trace of the crown of the wisdom teeth appears at 12 and the eruption occurs between 18 and 25.

This (which tends to prove that the skeleton was that of a subject who had reached the age of 16 at least) demolishes all probability that it belonged to Louis XVII. Furthermore, the indication furnished by the wisdom teeth that the subject was between 18 and 20 is a still more striking disproof of this hypothesis. The skeleton which was exhumed in 1846 presented appearances which led to similar conclusions. Drs. Récamier and Bayle were of opinion that the bones and teeth belonged to a subject at least 15 years old. Drs. Lallemaud and Andral claimed that the age was 20, basing this opinion on the state of the wisdom teeth. Dr. Simon de L'Heiys expressed the opinion that the subject had passed 20. Magitot and Manouvrier arrived at the following conclusion: "The skeleton subjected to our examination is that of a male 1 meter 63 centimeters in height, and certainly aged from 18 to 20 years. This skeleton cannot possibly belong to the Dauphin, who according to historic tradition died and was buried at ten years and two months."

At the request of the Faculty of Paris Dr. Amoedo examined the dentition. He was unacquainted at that time (June 10, 1894)

with the experience of Magitot. Amoedo arrived at the following conclusion: "Given the usage of the free border of the incisor, taking into consideration the fact that on the left side of the lower jaw the space left free by the sixth-year molar has been filled by the second great molar, which is so advanced as to come in contact with the second little molar, thus favoring the development of the wisdom tooth of that side; given also the presence of two lower wisdom teeth, both of which have perforated the alveolar process, the right being more developed than the other; taking into account the fact that the upper wisdom teeth have fallen from the jaw after death, which indicates that they were not covered by the alveolar parietes and in consequence were ready to erupt; taking into account also the fact that the enamel of the teeth presents yellow stains—it must be concluded that the skull examined belongs to a subject at least 18 years old."

These results settle one question emphatically. The skeleton which has been so long received as that of Louis XVII. is clearly that of a much older person. It does not settle, however, the more interesting question, What became of the Dauphin? It is true that the claims of Eleazar Williams, the so-called American Dauphin, were disproved. There was nothing specially corroborative of his claims but the Bourbon nose, which is not an uncommon possession. The Naundorffs still vigorously claim to be Bourbons. Mathurin's claim was disproved in 1846 by very positive evidence. The origin of Richemont, the third of the alleged Dauphins, is lost in obscurity. It is not even known whether the name he commonly bore was real or assumed. By the year 1834 he had made himself so notorious by his pretensions to the throne that the government of Louis Phillippe thought it necessary to take action against him. Like Mathurin, Bruneau in the reign of Louis XVIII. was condemned to a term of imprisonment. He contrived, however, to escape from France after a few months' confinement, and returning not long afterward was allowed to live in peace. When he died, under the second empire, his papers were sealed up as though containing some important secret. In the judgment pronounced against him nothing is said about his claims to the throne. He was convicted of having in 1830, 1831, 1832, and 1833 (by a resolution concerted and decided between two or more persons not known) formed a plan for destroying government and promoting civil war. Richemont, or Baron Richemont as he called himself, died of apoplexy in 1853 at the house of Countess Apochier, whose husband had been page at the court of Louis XVI. On his tomb was inscribed this remarkable epitaph:

HERE LIES
LOUIS CHARLES DE FRANCE,
BORN AT VERSAILLES 27 MARCH, 1785,
DIED AT GLIEZE 10 AUGUST, 1853.

Five years afterward M. de Persigny, Minister of the Interior, ordered the inscription to be erased, and it was replaced by the following:

1785.
NO ONE WILL EVER SAY OVER MY TOMB,
POOR LOUIS,
HOW SAD WAS THY FATE.
PRAY FOR HIM.

While the Naundorff pretensions have been supported by some republicans, it must be admitted that what intrinsic evidence there is tends to support the claims of Richemont to be the "Lost Dauphin." The decided legal ignoring of his claim by Louis Phillippe is evidence in this direction.

THE ETIOLOGY OF SCARLATINA.[1]

BY W. J. CLASS, M.D., CHICAGO.

Numerous efforts have been made in recent years to discover the specific cause of scarlet fever. The most notable experiments along this line were those of Crajkowski, Klein, and Edington. Klein in a large number of cases isolated a streptococcus which he regarded as the cause. The streptococcus is considered by a number of French observers to be the cause of scarlet fever. Klein, I believe, considered the throat as the gateway by which the infection entered. Crajkowski in 1895 reported that, in fifteen cases in which he examined the blood of scarlet fever patients, he found a diplococcus present in comparatively small numbers. This diplococcus does not stain by Gram's method, and, in general, stains feebly and quickly loses its color. Cultures were obtained in bouillon and upon solid media, but not on gelatin. The development is said to be slow, and the colonies resemble small drops of dew, not more than one-third to one-half millimeter in diameter. It is pathogenic for mice, but not for rabbits. Crajkowski does not claim that the etiologic relation of this diplococcus to scarlet fever has been demonstrated. Edington isolated a number of microorganisms from the scales of scarlet fever patients, among them a coccus, which he named micrococcus capsaformis, and a bacillus, which he considered to be the causative factor of scarlatina.

Numerous other germs, mostly bacilli, have been described as occurring in the scales of scarlet fever patients, but their relationship to the disease has never been satisfactorily proven. In this connection a report by Behla, published in the *Centralblatt für Bacteriologie*, interested me particularly. Behla did not describe any germ, but he noticed that some pigs belonging to a peasant, in whose family there were several typical cases of scarlatina, developed a scarlet rash. In order to see whether there was any connection between the scarlet fever in the peasant's family and the rash in the pigs, Behla took some blood from one of the children having scarlet fever and inoculated a healthy pig with it; after a few days a scarlet rash appeared around the edges of the inoculation wound, followed by desquamation.

During the winter of 1897–98 the writer had occasion to examine a large number of cultures, taken from the throats of persons suffering from various forms of angina. These cultures, numbering

[1] Read before the Chicago Pathological Society, May, 1899.

about 700 or 800, were grown on blood-serum. On examining them I found that about every twentieth culture showed large diplococci mixed with other germs. During the early part of the winter I did not pay any attention to them, but towards spring I began to notice that they were most often present in the cultures taken from patients having scarlet fever. During the following summer my time was occupied by other work, and as there were comparatively few cultures to be examined, I dropped the matter temporarily. Last autumn the germ again showed itself in the cultures, and in an increasing percentage of the total number examined. I now began making cultures from the scales of scarlet fever patients on blood-serum, but without any satisfactory results. The same germ which was noticed in the throat cultures again appeared, but I could not isolate it, and it did not appear to be constantly present. I subsequently discovered that it was constantly present, but on account of its polymorphous character it appeared to be a different organism. As I had been working for the last two years with a culture medium composed of glycerin agar-agar, to which about five per cent of sterilized garden soil had been added, the thought occurred to me that perhaps the results would be better with this medium. And from the results of my experiments in cultivating scales, throat secretions, and blood from scarlet fever patients on this medium I arrived at the conclusion that the germ which I am about to describe is probably the specific causative factor of the disease.

Morphology.—A diplococcus, polymorphous in character, but resembling, as ordinarily seen in slides made from fresh cultures grown on my medium, a very large gonococcus. This biscuit-shaped appearance is best seen in specimens that have been but lightly stained. Tetrads are frequently seen, and probably they denote the beginning division of the organism. In very old cultures, grown under favorable conditions, it shows as an enormous coccus having a slight cupped appearance, the dividing line between the two portions being very indistinct in the more deeply stained specimens; a crescentic appearance of the germ is also sometimes seen under these conditions. By the division of the large diplococcus a number of smaller organisms are formed, which group together and do not appear as diplococci during the very early stages of their growth. In young cultures grown from the blood of a scarlet fever patient the germ is usually seen as a diplococcus, both segments of which are globular. Streptococcus forms are occasionally though rarely met with, as are also single cocci. Usually, unless in spread-

ing the culture on the slide it is rubbed very hard, these cocci occur in bunches of from ten to fifty, which bunching is due to the large amount of glutinous intercellular substance by which they are united. The organism has no capsule, although at one point of its growth it has the appearance of having one. There are no spores, it has no flagellæ, and when examined by the hanging-drop method does not show independent motion.

Staining.—Specimens derived from pure cultures were stained with a number of the anilin stains. With a watery solution of methylene blue very pretty pictures were obtained, especially when only lightly stained; carbol-fuchsin also stains it well and brings out its characteristics. It also stains with Bismarck brown and with Pitfieldt's flagellæ stain. Fresh cultures do not stain very deeply, however, with any of the stains mentioned. It is decolorized by Gram's method, though not to the same extent as the gonococcus, the larger variety of the germ holding the stain better than the smaller.

Biological Characters.—The culture medium on which this germ grows by preference is prepared as follows: Glycerin agar-agar is made according to the method generally used. To this is added about five per cent by weight of black garden earth, which has been rendered sterile by discontinuous heating. The garden earth is first dried thoroughly, then sifted through a very fine hair sieve until it is reduced to a fine powder, all particles of gravel, sand, etc., being removed. It is then mixed with sufficient bouillon to form a thin paste. This is boiled for an hour, enough sterile bouillon being added from time to time to replace that evaporated by boiling. It is then set in a warm place for a few days to allow the spores found in the earth to develop, and is then again boiled for an hour, after which it is again set aside for a few days. This procedure is repeated until no growth can be developed. It is then added to the agar-agar, which mixture is also boiled for about thirty minutes, and then put aside for a few days to see if germs develop. Should this be the case, the mixture is again boiled and tested as before. On this medium the scales from a scarlet fever patient are placed with a sterile platinum loop, and the tubes put in an incubator, the temperature of which is kept at about 35° C. In from forty-eight hours to one week small whitish-gray semitransparent colonies appear along the track of inoculation and around the scale. These colonies are isolated at first, but subsequently coalesce. Their diameter varies somewhat, but is in general about one millimeter. On taking up some of the material of which the colony is composed

with a platinum needle, it is seen to be glutinous, being drawn out in threads like glue. If the culture medium is dry, or when the colonies are old, they lose their viscidity and become darker in color.

Respecting the cultures grown from the blood I wish to state that those taken on the first day of the disease as a rule grow quite readily. Later in the disease the growth becomes more meager, so that without a very careful inspection of the culture no growth is apparent. However, on running a sterile platinum loop over the surface of the medium and making an examination of the material, the germ will be found present. Depending on the severity of the disease, it is sometimes necessary to inoculate more than one tube in order to obtain a growth. The poor growth of the blood cultures obtained in the later periods of the disease is in my opinion due to the inhibitory action of the scarlet fever blood. As an illustration that this theory is plausible I would refer to Widal's test.

On the blood-serum furnished by the Health Department for the diagnosis of diphtheria there is a growth, but it is much less than on the medium described by me, the earth agar-agar being especially adapted for growing the germ from the scales and throat secretions; for blood cultures the serum will do almost as well, as the germ is not mixed with other organisms. On glycerin agar it grows feebly and does not show its characteristic features, which caused me to believe for a time that the growth on this medium was due to a contamination. On gelatin I have not been able to get any growth. In bouillon they do not appear to multiply. Milk is not affected by these organisms, although they apparently multiply in it.

The germ described has been cultivated from the scales of seventy-four cases of typical scarlatina, from the throats of about fifty cases of angina accompanying scarlatina, and from the blood of sixteen cases of scarlatina.

Control Experiments.—1. In order to ascertain whether the germ was present in the throats of persons who had not to their knowledge been exposed to scarlet fever, I examined thirty-six cultures from as many different persons. The diplococcus scarlatinæ was found in eight specimens, but only in very small numbers, while in the angina of scarlet fever it was invariably present in great numbers.

2. The thought occurred to me that the germ might be a normal inhabitant of the human skin. To eliminate this point I examined scales from twenty-three persons not afflicted with the disease, the scales being mostly those of dandruff, with the result of finding it present in three instances.

3. Examination of the blood of ten persons in a healthy condition, the blood being taken with the same precautions as those observed in collecting it from the scarlet fever patients, gave an absolutely negative result as far as any growth was concerned, while in the cases of scarlet fever the germ could almost invariably be cultivated during some period of the disease between its onset and the full development of the rash.

Pathogenesis.—Rabbits and guinea-pigs in good condition were inoculated by subcutaneous injection of a pure culture, by scarification and inoculation of the wounds produced, and by injection into the abdominal cavity, without producing the slightest results. The negative results of the subcutaneous injections show that the germ is no pus producer, at least not in the species mentioned.

Subsequently two guinea-pigs, whose vitality had been lowered by keeping them for a period of about a month in a dark place, were injected with approximately the same amount of a pure culture as was used in the other animals. On the third day after the inoculation the animals began to show signs of illness, the rectal temperature being increased by about 2° F. One of the animals died on the eighth, the other on the tenth, day after inoculation. Post-mortem examination showed a pronounced nephritis in both animals. The cortex of the kidney, after removing the capsule, showed numerous minute hemorrhages. On cutting through the kidney the substance seemed softer and more friable than is normally the case. The pyramids stood out plainly and were of a dark-red color, the entire organ appearing congested and edematous. Culture tubes were inoculated from the kidneys, and a pure growth of the organism described by me was obtained. The other organs of the animals showed no microscopical changes.

As Behla had shown that swine were apparently susceptible, a number of these animals were inoculated with cultures derived from the scales of a virulent case of scarlatina.

Animal No. 1: Weight about 20 pounds; in good condition; skin perfectly normal; no sign of any skin lesion. Rectal temperature 101½° F. About one cubic centimeter of a culture of the diplococcus was mixed with about three cubic centimeters of distilled water and injected into one of the veins of the ear. During the first four days the animal showed no signs of any disturbance. On the fifth day the animal became restless and the rectal temperature rose to 103° F. On the seventh day a pronounced reddening of the skin was noticed, most marked on the abdomen; this lasted about thirty-six hours. On the tenth day the animal began to

scale, the scales being most numerous on its abdomen and ears. Cultures made from the blood and scales showed the same organism as was injected. This animal was killed, and on examining its organs the kidneys were found to present a similar condition to that noticed in the kidneys of the guinea-pigs, with the exception that the right kidney showed a small abscess in the cortex. Cultures taken from the kidneys again showed the same germ.

Animals Nos. 2, 3, and 4, weighing 12, 16, and 19 pounds respectively, were inoculated in a similar manner with similar results in regard to the rash and scaling, the same germ being found in their blood and scales. In the third animal injected the eruption was more of a papular character and the reddening was not so marked.

Animal No. 5, weighing about 25 pounds, was injected subcutaneously in the abdominal region about twelve days ago, the culture used being the fifth generation of the one used in the previous experiments. No reaction, except a rise in temperature of about 2° on the fourth day after the injection, has been noticed up to the present time.

I wish to state that the germs used in these experiments were not isolated by flowing plate cultures, but I am quite certain that they were not contaminated by other germs, as repeated careful examinations showed; the cultures from the blood and kidneys of the animals did not show any admixture. The reason why I did not isolate the germs by means of the process mentioned was on account of the fact that their vitality is destroyed by heating, the cultures obtained by isolating the germ by means of the plate method growing very poorly.

Before concluding I would like to mention briefly a few differential points between this germ and similar ones that have been found in the skin and nasopharynx.

Micrococcus tetragenous subflarus: Flat, dirty-white colonies with shining surface; turns brown at the margins after three or four days.

Micrococcus tetragenous versatilis: Colonies pale yellow, which later become orange colored. Grows profusely on ordinary culture media; takes Gram's stain. Is almost universally present.

Diplococcus coryzæ: Grows readily upon gelatin plates; forms white, glass-like, slightly elevated colonies.

Diplococcus albicans tardus: Much smaller, grows much slower, dark yellow growth on gelatin. This germ is found on the surface of the body and in the air.

Micrococcus cumulatus tennis: Found in the nasal mucus; large

cocci associated in masses. Colonies are oval and perfectly transparent.

Micrococcus albus liquifaciens: Liquefies gelatin readily; perfectly white shining layer on agar-agar.

Diplococcus fluorescens fœtidus: Found in posterior nares; quick growth, brownish-gray layer, liquefies gelatin readily.

Micrococcus of Demme: Found in pustules of pemphigus acutus. Growth on agar has stalactite-like outgrowths and club-like projections. Colonies milk-white in color, never transparent.

BOOK REVIEWS.

REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS, 1897.
THIRTEENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF THE COMMONWEALTH OF PENNSYLVANIA; Vols. I and II, 1898.

This last report of the Massachusetts State Board of Health is an important document, and contains many excellent studies of value to the sanitarian and public health officer. An examination of its contents shows that a large amount of scientific work has been performed under the direction of this Board.

Part I deals with advice to cities and towns, which is given under the Act of 1888, Chapter 375, and is entitled, "An Act to protect the purity of inland waters and to require consultation with the State Board of Health regarding the establishment of systems of water-supplies, drainage, and sewerage." The operation of this Act seems to us to be one of the most efficient of the centralized supervisions with which we are acquainted. No smaller division than a State can exercise proper supervision over water-supply, drainage, and sewerage.

Following this are tables of thousands of analyses of water taken from the supplies of various towns, lakes, rivers, and ponds. This is followed by a summary of water-supply statistics which includes a record of rainfall and flow of streams.

A report of the tenth year of the experiments upon the purification of sewage and the filtration of water, made at the Lawrence Experiment Station, is included in this volume. This series of reports forms the most valuable and original series of experiments ever made on this important branch. The work of the current year is fully up to that which has preceded. The remaining portion of the volume is devoted to the sewage-disposal in the towns of the State of Massachusetts, a summary of the work done in the inspection of food and drugs, and a report upon the production and use of antitoxin in diphtheria. The book closes with a statistical summary of diseases and mortality.

The first volume of the Pennsylvania reports deals with the usual vital statistics and contains some excellent reports of the investigation of localized epidemics, and what is perhaps of more importance, a thorough study of the development of water dams and their dangers. This is illustrated by numerous diagrams and pictures of the various dams of the State and of the famous ones of this and other countries. It forms the bulk of the committees' reports on water-supply and was evidently inspired by the terrible disaster in the Conemaugh Valley in April, 1895, in which nearly twenty-five hundred people lost their lives. With the report is coupled a recommendation to the Legislature that the Board of Health be given discretionary powers in the construction of dams and securing their regular inspection.

The second volume contains a very different line of work from that of the Massachusetts Board. The first part of the volume deals with the subject of Medical Education and of the operation of the examining board. In it is an excellent summary of the laws governing medical practice in the several States of the Union. We note that diplomas confer no right to practice in Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Maryland, Maine, Minnesota, Mississippi, Montana, New Jersey, New York, North Carolina, North Dakota,

Pennsylvania, South Dakota, Texas, Utah, Virginia, West Virginia, Washington, and Massachusetts. In the latter State the diplomas of their own colleges alone confer the right to practice. Non-graduates may be examined by State boards in Alabama, Arkansas, Connecticut, Illinois, Iowa, Kansas, Maine, Massachusetts, Mississippi, Missouri, New Jersey, Oregon, Rhode Island, Tennessee, Texas, Vermont, Virginia, West Virginia.

The following are classed as States and Territories with various requirements as to registration or approval of diplomas: California, Colorado, District of Columbia, Idaho, Indiana, Indian Territory, Kentucky, Michigan, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, Oregon, South Carolina, Vermont, West Virginia, Wisconsin, Wyoming. But a single State is set down as having no legal requirements for the practice of medicine, viz., New Hampshire.

It will be of interest to those who live in the neighborhood of Chicago to learn that she has now fourteen medical colleges, which have the right to confer diplomas upon undergraduates; this does not include the three postgraduate schools. All of the medical colleges of Illinois are credited to Chicago. This preeminence of Chicago as a medical center is nearly equaled by St. Louis, with ten medical colleges. Baltimore comes next with nine medical schools, and New York and Louisville are somewhat behind in the race, having only eight each. To do justice to Greater New York, we perhaps ought to class the single Brooklyn college with the other schools; in that case she would lead Louisville as a medical center. Ohio leads all the States in the Union in the number of its medical schools, but they are much more evenly distributed over the State, being located in Cincinnati, Toledo, Columbus, and Lebanon; in all, she is credited with seventeen institutions of medical learning.

The last half of this volume deals with meteorological observations, largely of a statistical character. A number of excellent maps are given showing the total precipitation by months during 1897. They are of interest as showing the relation of topography and rainfall at different seasons of the year.

TEXT-BOOK OF PRACTICAL OBSTETRICS. By Egbert H. Grandin, M.D., and George W. Carman, M.D. Second Edition, Revised and Enlarged. Chicago: The F. A. Davis Co. 1898.

It is three years since the first edition of Grandin's Obstetrics appeared. At that time, though a much smaller work than the present volume, it was well received. Unlike many recent works upon pregnancy, it enters immediately upon the subject in hand, giving no introductory account of the anatomy of the parts, nor of the embryology. The work begins with a description of the diagnosis, duration, and hygiene of pregnancy. It is illustrated with a number of plates showing the changes in the contour of the abdomen, and is an excellent description of the signs of pregnancy.

The chapter dealing with the pathology of pregnancy mentions the usual complications and methods of meeting them. In placenta previa the author advocates the elective emptying of the uterus, which he says will save nearly 90 per cent of the infants and 98 per cent of mothers. These statements he says apply strictly to instances where there is no preliminary use of the tampon, or worse than all, the employment of ergot.

In the diagnosis of the presentation especial attention is attached to external examination, and plates are given showing the position of the hands in palpating the abdomen.

Part II deals with the mechanism, clinical course, and management of normal and abnormal pregnancy and the care of the new-born infant. It is illustrated with a number of plates; those which show the position of the child in the pelvis are exceedingly valuable, as well as those which illustrate the head as it is passing the pelvic outlet, together with the manner in which the perineum is protected. Cuts like those which show the method of catheterization, as well as that showing the delivery of the placenta by manual expression, are absolutely useless, as the details are so obscure that nothing can be seen which would be a guide in this procedure. We think that if illustrations are felt to be needed, a diagram or drawing is preferable to the reproduction of a photograph.

Part III deals with the normal and pathological puerperium.

Part IV deals with obstetric surgery, and includes an account of asepsis, dystocia, and abortion; the forceps, version, symphyseotomy, Cæsarian section, embryotomy, the surgery of the puerperium, and gestation. Many of the illustrations in this section are diagrammatic and are consequently of value. They might, we think, have been substituted with advantage for the three obscure plates which face page 342 and illustrate the faulty and correct position of axis-traction forceps.

The work as a whole forms an excellent addition to obstetric literature, is concise and well written, the text being included within 461 double-leaded octavo pages.

PENALTIES OF TASTE AND OTHER ESSAYS. By Norman Bridge. Chicago and New York: Herbert S. Stone & Co. 1898.

This delightful little volume is a collection of six short essays which takes its title from the first one, The Penalties of Taste. There follow: Two Kinds of Conscience, Bashfulness, The Nerves of the Modern Child, Some Lessons of Heredity, Our Poorly Educated Educators.

We should like, if space permitted, to make numerous extracts from these clever little talks, but we can only commend them to our readers, who should secure the volume and read it in its entirety. An attempt to quote from its pages would result in our being unable to make a selection, as where all is equally well done it is difficult to make a choice. The essays are in no sense medical, and thus are naturally devoid of technical phrases, but being from the hand of an accomplished physician are of great value because they are founded upon an accurate knowledge of biology and physiology, the correct apprehension of which is so necessary in solving any social problem.

Notwithstanding our expressed intention not to quote, we cannot refrain from extracting the following from the "Lessons of Heredity:" "Two well known women of Chicago have predicted that women and men will some day be superior to 'physical laws, inherited tendencies, and social conditions.' That is to say, that then the human body will not grow by the appropriation of food to the needs of the organism by chemical and vital forces; the child will not resemble his parents because they are his parents, and he will grow up uninfluenced by the social atmosphere about him. It may be they are right, but for all practical purposes we might as well postulate that physical laws are not likely to change."

Perhaps the most trenchant essay of the lot deals with the educators. He points out the want of common knowledge of the sciences possessed by the

average educator, and he refers to the fact that "preachers often tell the story of the education for the ministry of boys who have been found, after vain efforts and trials, to be utterly worthless for any other occupation. Doctors sometimes tell the same story to explain the presence of inefficient members in their own profession. The medical profession suffers more in this way than the clerical, and the profession of teaching suffers more than either and probably more than any other." The essay closes with the statement that the community "owes it to the men and women of to-morrow that they shall as far as possible associate with and learn of the most sensible, best rounded people, the most sane and wholesome natures, folks who are freest from hysteria and crankiness of all sorts, and even from the heroics of ostentatious goodness."

The book is beautifully issued by the publishers.

THE ANATOMY OF THE CENTRAL NERVOUS SYSTEM OF MAN AND OF VERTEBRATES IN GENERAL. By Prof. Ludwig Edinger, M.D. Translated from the Fifth German Edition by Winfield S. Hall, Ph.D., M.D., Assisted by Philo Leon Holland, M.D., and Edward P. Carlton, B.S. Philadelphia: The F. A. Davis Co. 1899.

The translators of this book have rendered a very material service to English-reading physicians. The work is and deserves to be a classic, but since the earlier translation of Riggs and Vittum it has been so amplified as to be scarcely recognizable. The original twelve lectures have served simply as a basis of a treatise which is doubtless the best extant on the subjects it covers.

Edinger's own researches have been sufficiently numerous and careful to make the book valuable, but it is eclectic as well as original, as the more than six hundred bibliographic references testify.

There can be no doubt that the author's method of studying the structure of the nervous system, from the standpoint of comparative anatomy and embryology, is exceedingly valuable and, indeed, the most logical, and hence the clearest way of attaining a well-arranged knowledge of the subject. As a matter of fact, no one who attempts to know much of the nervous system of man and other vertebrates can afford to be without this work, and probably none has been so popular and useful.

The translators have done their work perfectly, and the three complete indexes—one of authors, one of comparative neurology, and a general index—add materially to the value of the work as a book of reference.

A PRACTICAL MATERIA MEDICA FOR NURSES. By Emily A. M. Stoney. Philadelphia: W. B. Saunders. 1899.

There is an old saying that "a little knowledge is a dangerous thing," and the saying is particularly true of the modern trained nurse. Commonly, the less she knows of the treating and curing diseased conditions, the more accurately and closely will she follow the directions of the physician and attend to the business of nursing. The body of this work is made up of a materia medica which is so exceedingly condensed and brief that it is more likely to form a basis in the nurse's mind for adverse criticism of the physician's directions than it is to aid in the treatment of the case. The work has a table of gestation, a dose-list, an account of poison emergencies, and a glossary. Some of these may be of value to a nurse who does not care to usurp the functions of the physician.

EDITORIAL COMMENT.

THE STANDARDIZATION OF DRUGS AND THE FORTHCOMING REVISION OF THE PHARMACOPŒIA.

The present uncertainty of therapeutics is due not a little to the varying strength of drugs employed in the treatment of disease. It has been conclusively shown that no two parcels of hyoscyamus, belladonna, nux vomica, cinchona, opium, aconite, ergot, or digitalis contain the same proportion of active constituents. What is true of these important remedies is still more true of those which are less frequently used and to the gathering and preservation of which less attention is consequently paid. The greater use of the alkaloids in medication which has characterized the prescribing of later years is in a large measure due to the varying strength of the official preparations. That this is no fanciful or minute difference is attested by the remarks frequently heard in gatherings of medical men, that if a good preparation can be secured of a particular drug almost certain therapeutic results will follow.

This uncertainty finds constant expression in medical literature; a particular writer reports a number of cases in which the results achieved by a given drug are favorable. It is followed within a short time with another report in which the same drug was given for the identical conditions, and no therapeutic results were reached. If all preparations were of the same strength accumulated statistics would soon become valuable in settling the worth of drugs for the purpose for which they are used. The problems of the statistical methods in therapeutics are enormous at the best, and if the preparations used are of variable strength the confusion becomes worse confounded. It needs no extensive analysis of the literature to show the force of these statements; scarcely a medical journal can be consulted which does not show the confusion which has crept into medical literature from this cause alone. The last Pharmacopœia recognized the principle of standardization and applied it to opium, cinchona, and nux vomica. There is no reason why the same principle should not be extended to the standardization of every drug which it is possible to exactly analyze. The chemist has perfected refined and accurate methods for determining the alkaloidal strength of many drugs. But unfortunately for the prestige of the chemical laboratory, there are certain very important drugs, whose use cannot be dispensed with, that are not amenable

to chemical assay. For the sake of example we might mention digitalis, strophanthus, and Indian cannabis. The latter is perhaps the most variable member of the materia medica, and yet its therapeutic utility entitles it to an honorable place in the Pharmacopœia.

There is only one way in which these drugs, and others organically like them, can be standardized, and that is by actual physiological tests upon living animals. A given dose of a preparation of digitalis, proportioned to the body weight of the animal selected, should always produce a definitely uniform effect on that animal's organism. If it fails to do so, it is then an easy matter to bring that preparation up to the required standard of strength. If the oxytocic power of ergot were always determined upon pregnant animals before its administration to human beings, the physician would less frequently experience that keen and bitter disappointment which is so apt to engender therapeutic skepticism. The revision committee of the next Pharmacopœia may not, for obvious reasons, deem it expedient to embody the principle of physiological standardization in the coming edition of that classic volume. But the physician is not bound, *in toto*, by the dictum of the Pharmacopœia. Owing to the enterprise of at least one American pharmaceutical house physiologically tested preparations are now available. In our humble opinion, the medical man, in justice to his patient and to himself, should always insist on having only standardized drugs supplied upon his prescriptions; chemically assayed drugs, where a chemical assay is possible, and physiologically assayed preparations in every instance where it is not practicable to determine the therapeutic activity of the drug by the chemist's art.

The forthcoming revision of the Pharmacopœia presents problems of greater difficulty than those which have confronted the committee of any previous revision. A failure to recognize many of the animal extracts, particularly that of the thyroid gland and the serums generally, will not give satisfaction to the profession. The separation between the Pharmacopœia and actual practice has been widened, and a determined effort on the part of the committee should be made to bring the Pharmacopœia in line with advanced and advancing therapeutics. The matter of standardization of drugs is one of vital importance and one which the committee of revision should undertake in no half-hearted manner. Absolute standardization cannot of course be reached, but an earnest attempt in this direction can be made, and it would be far better for the committee to err in going too far rather than by adopting a halting

policy. A standardized preparation is far superior to one whose strength is not accurately measured; even approximate accuracy of standardization would be far better than none.

The importance of this subject is so great that we earnestly trust there will be a full and free discussion of the whole matter. The pages of MEDICINE will be open to communications upon this subject, and it is to be hoped that our contributors and subscribers will present their views upon every phase of this important topic.

THE CHICAGO DRAINAGE CANAL.

According to the *Sanitarian* for April, 1899, Prof. Hiram Philipps, who is said to be consulting engineer of the Missouri State Board of Health, has completed an investigation of the proposed Chicago drainage canal. This is of considerable importance, especially as it is expected that the canal will be opened for the passage of sewage the latter part of the current year. Philipps comes to the conclusion that the canal will be a constant menace to the health of all persons living along its borders. According to the *Sanitarian*, Prof. Hiram Philipps is an authority on causeways, water-supplies, and the sanitary condition of rivers and streams. Just why he combines causeways with his other occupations it is difficult for us to see, but we are informed that he has been professor of sanitary and civil engineering at the Missouri State University. We understand that his investigation of the proposed scheme of Chicago to dump its sewage into the Mississippi River has been systematic and thorough. We are glad of this latter fact, and would be pleased if we could accept his conclusions unreservedly; but as a matter of fact there is very little data upon which he can base a conclusion. A very considerable proportion of the sewage of Chicago now passes through the smaller canal and goes on undiluted into the various streams which it must follow before reaching the Mississippi River. That a larger amount of water and a more rapid flow will materially increase the danger of the towns further down the streams cannot be affirmed.

We do not think the criticisms of Professor Philipps are well based, or that any sewage flowing into the upper end of this canal will retain its poisonous properties until the time it reaches the Mississippi River. That the big ditch will prove somewhat unsightly and foul-smelling is probably true, but that it will prove a menace to people living along its banks we do not believe, unless

they should drink some of the water, and it is hardly conceivable that they would do this. While the danger to the lower portion of the valley is not great, yet the policy that would permit the pollution of the streams of a country by the sewage of its great cities is one that is worthy of the unsanitary conditions of the last century. The drainage canal in its inception was the outcome of political conditions and desire for a ship canal, increased water power, and various other circumstances. A multiplicity of motives governed the inception of the enterprise, and it was vigorously opposed by some of the best sanitarians. With all that is known of the treatment of sewage and the filtration of water, it is absurd to think of pouring the sewage of a city of two million people into the watercourses of the State. Chicago's water-supply and sewage systems have been a series of makeshifts from the beginning. There has been an enormous growth of population, necessitating an increased water-supply and an expansion of the sewage system every year. Consequently there has been no plan adopted that would meet the requirements of a very large population. No sooner was a public work completed than it was outgrown by the population. The drainage canal will probably prove no exception to the rule, and will soon be an inadequate solution of the drainage problem.

We feel sure that the only solution of the disposal of sewage in Chicago is by precipitation or by sewage farms; these combined with an adequate system of filtration of its splendid lake water will place Chicago in the front rank of healthy cities. The pollution of the water-supply of the State is only a makeshift which puts off for a time the necessity of grappling with these two great sanitary problems.

TOMATOES AS A CAUSE OF CANCER.

A lengthy discussion has been proceeding in the *Pall Mall Gazette* as to whether or not tomatoes cause cancer. The weight of competent opinion is against the ridiculous idea. Statistics show that the deaths from cancer have increased in England since 1840 from 177 to 764 in the million. During the same period tomatoes have become a common article of diet. The common error of assuming that associated phenomena necessarily stand in the relation of cause and effect thus repeats itself. It is said that a distinguished medical authority advances the view that the increased consumption of meat, which has more than doubled in England since 1840, is the chief cause of cancer. Perhaps if careful statistical work were done,

it would be found that the increase of cancer is associated with other sociological phenomena. It may be found that during the same period there has been an increase in the consumption of whiskey and tobacco, or there may be an increase or decrease in the number of domestic animals, and the use of electricity.

We pointed out in these columns that it was probable that cancer had a relation to longevity. A decrease in the death-rate from infectious diseases, meaning a lessened number of deaths in early and middle life, must of necessity increase the average age of the living. Cancer, while it occurs at all ages, is much more frequent with advancing years. The death-rate from cancer in England has increased because there are more elderly people in England.

MILK SUPPLY OF CHICAGO.

Circular No. 13 of the University of Illinois Agricultural Experiment Station has a report by Jane Addams and H. S. Grindley on the milk supply of Chicago. One hundred samples were collected near Hull House and eighty-five in the vicinity of the Lewis Institute. While the price of the milk collected in the vicinity of Hull House differed from that collected near the Lewis Institute, the quality of the milk was not strikingly different. The main departure was in a lowered fat content, due to the practice of skimming. In only two samples out of fifty in the analysis of the second year during which the investigations were carried on could it be directly determined that water had been added to the milk.

Of the eighty-five samples sold in the Lewis Institute district, only fifteen could be considered as legal according to the city ordinance; of these fifteen, only five could be considered up to the average in their content of both fats and solids. There was a striking inferiority in the milk supplied by shops to that obtained from the wagons of the milk pedlers, the latter being almost invariably of a better quality than the former. The report goes on to say that there can be no good reason for the remarkably poor quality of the milk furnished the city of Chicago, for it is situated in one of the finest dairy regions of the world. Notwithstanding this favorable circumstance, the milk supply of the city of Chicago is below that of most of the large Eastern cities, and is far inferior to what it should be.

From their work it is evident that the inspection of milk in this city is not what it should be, or else venal dealers have some suc-

cessful method of avoiding the civil inspection. It is evident that milk supplied consumers should form the basis of an analysis and not that supplied to the official inspector. It is also claimed that the present standard of the city is too low and admits of considerable skimming and watering, still leaving the milk up to the standard required by the city. They claim that a standard requiring 12.5 of total solids, of which 3.5 per cent is fat and 9 per cent other solids, would materially raise the quality of milk supplied and would do no injustice to the milk producers.

LATE SYMBOLIC INSCRIPTIONS OF MEDICAL INTEREST.

In early issues of MEDICINE we have had occasion to refer to the hieroglyphics which so frequently ornament communications of the ophthalmologist. We have always thought that the adoption of so many arbitrary symbols by those who devote especial attention to diseases of the eye was really for the purpose of keeping the general practitioner out of the special field. No one could look over a whole page of reports of refraction without realizing how important it was for a patient to be immediately placed in the hands of one who could understand a page written in that way.

One of the oldest specialties is diseases of the eye and ear, but of late the fact that the ear is more especially connected with the throat has given rise to the aurists and those who include throat work. A few have expanded into eye, ear, nose, and throat specialists. It is probable that this early connection between the eye and the ear has permitted of a transference of the hieroglyphic infection from the literature of the eye to that of the ear. We reproduce the following from a recent article on abscess of the cerebellum:

> The hearing tests were:
>
> W. r. 60/60″ : l. 0/60″ : V. r. 20/25′ : l. 1/(45′)?
>
> F. 512 v. s. $\frac{AC}{BC}$ = $\frac{20''}{10''}$ r. 20/8″ : l. 0/6″ F. 512 v. s. r. > l.
>
> Tone limits. High r. n. : l. n. Low r. 40 v. s. : l. 1024 v. s.

The above is published without one word of explanation to the unfortunate reader. It is probable that the author knows what these symbols mean. We are frank to say that we do not, nor do we know where information could be obtained that would enable one to decipher them. We do not believe that one medical man in five hundred on the average would know what they mean.

The article from which the above was taken is a very interesting

one upon abscess of the cerebellum, which contains an excellent table giving an analysis of the symptoms in this disease which would be easily comprehended by a first-class medical student.

We find in a publication, contemporaneous with the above, a statement of the hearing power of a patient as follows:

Watch	R $\frac{2}{60}$	L $\frac{2}{60}$
Voice	R $\frac{1}{20}$	L $\frac{2}{20}$
Rinné		512 V. S.
A. C.	R 7	L 15
B. C.	R 17	L 25
Weber 256 V. S.	R=	L

This second example, it will be seen, bears a very faint resemblance to the first. We are not sure that we can positively identify more than one symbol in the two examples.

"HUSA" EXPOSED.

Not long since one W. W. Winthrop, of Fort Worth, Texas, exploited a wonderful plant which had been discovered in the Everglades of Florida as a specific remedy for the morphine habit. A peculiarity of this plant was that it was unknown to botanists, and that the plant did not admit of preservation by drying or other means so that it could be examined by botanists. It was only obtained in limited quantities from the said W. W. Winthrop, A.M., M.D., and his supply was obtained solely from a few Indians who were met at a secret place, presumably at the margin of the Everglades, where they exchanged their precious "husa" for beads, trinkets, rifles, and other appurtenances of civilization.

While the plant was difficult of preservation, a tincture could be made which would preserve its virtues indefinitely and which could be sold for the remarkably small sum of $10 for ten three-ounce bottles, which was said to be sufficient for a month's treatment. This pleasant fairy story was published in a couple of first-class medical journals, and from these extensively copied by the periodical press.

Recently Professor Lloyd, of Cincinnati, has analyzed "husa," and has found it to contain 1.5 to 2.5 per cent of morphine; also salicylic acid, alcohol, water, glycerin, and a coloring matter, probably burnt sugar. Winthrop states that "a multitude of physicians

are availing themselves" of the gracious privilege which he accords to them. They will recognize the philanthropy of W. W. Winthrop, A.M., M.D., when they learn that they have been paying $10 for 234 grains of morphine sulphate, plus a little salicylic acid, alcohol, and a handful of burnt sugar.

THE MEDICAL PROFESSION IN RELATION TO PUBLIC HEALTH LEGISLATION.

The medical profession has appointed itself the keeper of the public health. Largely through its efforts in various States medical practice acts have been passed which control entrance into the profession and aim more or less seriously at fraud and deception in the practice of medicine.

The view generally prevails among the laity that this class of legislation is in the interest of the profession. It is claimed that in advocating these measures they are attempting to obtain special and exclusive privileges in the practice of their calling, and that, once inside the fold, they are endeavoring to erect barriers which will keep others out of the highly lucrative field of medical practice. That such a view on the part of the laity is incorrect and unjust will be admitted by any one familiar with the facts, but it must be confessed that such a view has some foundation in much that has been written regarding medical practice acts, and some basis in proposed legislation.

We seriously question the advisability of the profession engaging actively in an effort to pass public health legislation. In an advisory capacity, and in a thorough study of the problems concerned in public health demonstration, it will find full scope for the exercise of the broadest philanthropy, and as an adviser and counsel in these matters it will be able to do vastly more good than it will in active efforts toward the passage of legislation. When public sentiment and intelligence have advanced to a point where the need of legislation of this kind is admitted, then it is the business of the profession to place its accumulated knowledge at the service of the public; but we seriously question the advisability of the profession descending into the arena of practical politics and there endeavoring to thrust its matured wisdom down the throat of an unwilling public. If it does this, it is inevitable that its motive should be misconstrued, and it will be necessary for it to bear the burden of not a little recrimination. It is not, however, these things that should keep us from taking too active a part in legislation, as with right motives one can

bear with equanimity any amount of adverse criticism, but we seriously doubt the value of legislation that is far in advance of public sentiment. We believe the attitude of the profession should be educational, and it should show such an active interest in legislation and take such part in the passage of good laws as is incumbent upon all good citizens.

CHANGES IN THE COLLEGIATE YEAR OF THE MEDICAL COLLEGE.

Rush Medical College and the Northwestern University Woman's Medical College have adopted what is known as the quarterly system of medical instruction. This is based upon a division of the year into four quarters, which form the unit of instruction. The plan adopted by Rush Medical College is to permit students to enter at the beginning of any quarter, and they are required to take three quarters in each year, so that the sum total of time spent at the college shall be thirty-six months in four years; no student, however, shall be allowed to attend more than nine months in any one year, but he may elect which of the three quarters in the year he will attend. Rush Medical College has adopted a system of optional study by which considerable elasticity is given to the curriculum and some choice of teachers, as many of the practical courses are paralleled. Rush Medical College is to be congratulated on having led in the adoption of this important advance in medical education.

THE PROBLEM OF NUTRITION.

What would seem to be an appreciable advance in the feeding of patients is found in a recent article by Freidenthal and Lewandosky in the *Berliner Klinische Wochenschrift* of March 20, 1899, in which they claim to have succeeded in introducing blood-serum into the circulation of animals and to have thus maintained their nutrition. In this matter they seem to have realized the dream of transfusion of a quarter of a century ago. The destructive action of the serum on the corpuscular elements of the blood was overcome by exposing the serum to temperatures of from 55° to 60° C. The success attending their injections is attested by the fact that only an insignificant amount of albumin appeared in the urine after the injections.

ABSTRACTS.

MEDICINE.

Clinical Aspects of Granular Kidney.—

Samuel West (*Lancet*, Feb. 11, 1899) believes that the frequency of granular kidney is by no means adequately recognized. An investigation of the cause of death in persons brought into St. Bartholomew's Hospital dead or dying shows that in seventy-nine cases 48 per cent showed chronic interstitial nephritis; in 16.8 per cent it was the only cause of death; and in 12.6 per cent it aided in causing death, or in causing the lesion which led to death. The condition is a bilateral one. The kidneys are generally reduced in size and weight, but sometimes are above the average. The changes consist in fibroid induration and cellular degeneration. West says there are two forms of granular kidney—the white cirrhotic and red cirrhotic. The difference is chiefly one of color. Microscopically, no clear distinction can be drawn. Whether it is in the vascular system or in the kidney itself that the primary causes of the disease are to be sought is still an undetermined question. The history of antecedent acute nephritis is a rare circumstance in these cases, and a case practically never can be traced from the initial acute nephritis to granular kidney. Most cases of granular kidney, therefore, are of other origin. The changes in the arteries with granular kidney occur throughout the whole body. There are but two forms of general arterial change recognized in pathology, namely, atheroma and that connected with granular kidney. The atheromatous diseases of the arteries and the changes of granular kidney are different in kind as well as in history. In granular kidney the thickening of the vessels is fairly uniform; at any rate it does not occur in the irregular patches of atheroma, and it is universal. There is a considerable amount of muscular hypertrophy in the vessels, and this is associated in many cases with changes in the intima as well as in the adventitia, which are not atheromatous and yet are of a marked character. While the relation between the cardiovascular and renal lesions is difficult to determine, the cardiac lesions being of the nature of a hypertrophy must as in other cases be the response of the heart to some extra work thrown upon it of a permanent kind. It must, therefore, be secondary. It certainly seems more probable that both the heart

and the vessels hypertrophy together, for the purpose of assisting the circulation to overcome some obstruction. This being so, the obstruction must be peripherally seated and must be sought for in the small peripheral arteries and capillaries.

Whether primarily arterial or primarily renal, granular kidney is a disease *sui generis* and should therefore be treated under a separate heading in writing on the subject. The disease is insidious, the only definite symptom in the early stage being an increased frequency of micturition, especially at night. Symptoms do not occur until late in the disease, and are divided into cardiovascular and renal. Generally the cardiovascular are earlier than the renal. The cardiac symptoms are those of heart failure; the vascular symptoms consist chiefly of hemorrhage and its results. The renal symptoms come under two groupings and are of gradual or sudden development, and frequently are described as chronic and acute uremia respectively. The signs and symptoms are considered under: (1) the physical signs; (2) the cardiovascular symptoms; (3) the renal symptoms. The earlier signs are of the utmost importance, as early recognition gives the only hope of influencing the condition by treatment. The early diagnosis depends upon the physical signs and not the symptoms; these are high tension, thickened arteries, hypertrophy of the heart, and albuminuria. Arterial thickening in young persons should always arouse suspicion and lead to a careful examination. If granular kidneys exist, arterial tension should be high rather than low. The fall of arterial tension in the later stages is of great clinical importance in its relation to the prognosis. The irregular fluctuations in tension which take place in the later stages of the disease are a bad omen. In the earlier stages of the disease the pulse tension is high and the artery is thickened. If in any of these doubtful cases of high pulse-tension and thickened artery albuminuric retinitis or the early changes which lead to it are found, even in the cases in which albumin is not present in the urine, a diagnosis of granular kidney should be made.

The Etiology of Tabes.—

H. M. Thomas in the *Bulletin of the Johns Hopkins Hospital* of April 13, 1899, gives an analysis of 111 cases of tabes. Race, he thinks, exercises some influence in the production of the disease; thus, of the total number of cases at the dispensary, 10 per cent were negroes, while in the class of tabetics they only netted 4.5 per cent. An analysis of the cases of syphilitic infection shows that it is five and a half times as frequent among the negroes as among the

whites. Tabes was shown to be relatively infrequent in women; the immunity of colored women is shown by the fact that up to the time of the report the writer had seen but one case of tabes in a colored woman, and in that patient the diagnosis was somewhat doubtful. In relation to the cause of the disorder, the writer gives the following table:

Exposure to venereal contagion denied	3	
Exposure admitted but infection denied	7	
Infection denied (exposure?)	7	
Venereal infection denied		17—17.89 per cent
Gonorrhea alone	18	
Venereal sore denied		35—36.84 per cent
Gonorrhea with chancre—indefinite	15	
Gonorrhea with syphilis	20	
Gonorrhea		53—55.78 per cent
Chancre syphilis	38	
Syphilis with no history of chancre	2	
Certain syphilis		40—42.1 per cent
Chancre indefinite	20	
Possible syphilis		60—63.1 per cent

In a large proportion of cases of tabes a history of syphilis can be obtained. A not inconsiderable number of cases have no history of a venereal sore or other syphilitic manifestations. In negroes tabes is relatively uncommon, whereas syphilis is much more common in them than in the white population. The partial immunity of women is greater than can be satisfactorily accounted for by the relative infrequency of syphilis among them.

Trachoma Toxins and Antitoxins.—

E. F. Snydacker, in the *Journal of the American Medical Association* of February 4, 1899, published a paper in which he claims to have discovered a diplococcus which was the cause of trachoma. Since that date (*ibid.*, May 6, 1899) he has made an antitoxin, preparing a bouillon broth of the diplococcus and using the filtrate. This produced a moderate systemic reaction in guinea-pigs when injected beneath the skin. The toxin injected under the conjunctiva was followed by redness and swelling and marked chemosis. The palpebral conjunctiva was thickened and spongy, but the cornea remained clear.

The antitoxin was used upon a patient presenting well-marked trachomatous inflammation of the lids, the cornea of each eye being much involved. Vision was reduced in the right eye to perception of shadows, and in the left eye to fingers at about six inches. The right eye alone was treated by injections of the antitoxin, while the left eye was treated in the usual manner by scarifications and applications of protargol. Each injection of the antitoxin was followed

by marked redness and swelling of the lids, the reaction yielding quickly to cold applications, the enlarged follicles disappeared, and the cornea nearly cleared. Improvement was much more marked in the early part of the treatment than it was later. At the end of about two months the right eye, which it will be remembered was the one in which vision was most impaired, had improved so that vision was 20–70, and in the left eye only a perception of fingers at one foot. Another case of trachoma in which vision in the left eye was 20–200 and in the right 20–70 was treated in a similar manner, the right eye by protargol and scarifications, which resulted in an improvement of vision to 20–50. In the eye in which the antitoxin was tried, vision advanced from 20–200 to 20–70. Control applications were made with streptococcic serum, which produced very marked reactions, but absolutely no amelioration of the disease.

Cause of Arthritis Deformans.—

In a review of Bannatyne's work on rheumatoid arthritis in MEDICINE for March, 1899, we referred to his conclusions regarding the bacterial origin of this disease. Dungern and Schneider, in the *Münchener Medicinische Wochenschrift* of October 25, 1898, report a case presenting a clinical picture of arthritis deformans.

Fluid taken from the knee- and wrist-joints during life, and from all the joints and the gall-bladder eighteen hours after death, was examined. The only fluid in which organisms were at once detected by the microscope was that in the diseased gall-bladder, but cultures from every joint produced growths of a bacterium similar to that in the gall-bladder. These were small diplococci which could not be identified with any known organism, but which morphologically were very closely related to the bacillus lanceolatus. Though not pathogenic for animals when injected subcutaneously or intraperitoneally, when injected into the rabbit's knee-joint they produced changes exactly corresponding to those found in the joints from which they were isolated. Other organisms experimented with produced suppurative inflammation without erosion of cartilage. For these reasons the writers look upon these organisms as probably the chief cause of the chronic arthritis in this case. Other bacteria were present, though not constantly, and may have played a secondary part. Most likely the relations of the various stages of the disease were as follows: The acute attack of rheumatism produced a predisposition to arthritis, but the actual cause of the chronic multiple arthritis which followed was infection from the chronically inflamed gall-bladder.

Classification and Prognosis of Cases of Long-standing Deafness.—

L. E. White, in the *Journal of the Eye, Ear, and Throat Diseases* for April, 1899, thinks that prognosis is favorable in an inverse ratio to the time of the trouble and degree of advance, but to this rule there are many exceptions, so that he divides ear diseases which result in an impairment of hearing into six groups: chronic suppurative, chronic catarrhal, chronic secretory catarrhal, adhesive catarrhal, insidious, and labyrinthine. He calls cases chronic which have lasted five years or more. The three latter varieties, namely, adhesive catarrhal, insidious, and labyrinthine, alone present difficulties in diagnosis. Of all the tests he regards the voice as the most valuable, and with practice he thinks the test can be made fairly uniform. The whisper uttered after expiration is that part of the voice upon which most reliance can be placed. For the voice test he has devised a hearing chart in which normal hearing distance is set down as twenty-five feet, and the divisions are made to correspond with distances of five feet. The vertical lines of this chart represent the periods of time, varying from one week in the less chronic cases to a month in those of longer duration. He emphasizes the necessity of being able to give an intelligent prognosis. By making frequent and careful hearing tests, one can soon learn whether or not treatment is benefiting the case. He thinks much discredit has been done to the science of otology by sanguine hopes held out year after year to patients who did not and will not improve. They become discouraged, and in turn discourage many others who could easily be benefited. He emphasizes the necessity of early treatment, admitting that while it is true that long-standing cases are helped, in every such case quicker and better results would have been reached by earlier treatment.

The Nature of Cancer.—

Roswell Park read a paper at the last meeting of the New York State Medical Society which was a study of the frequency and nature of cancer. In closing he speaks of the work done in the laboratory in connection with the medical department of the University of Buffalo, for which the State made a small appropriation. Dr. Park was made director of the laboratory, and H. R. Gaylord was placed in charge of the pathological work. The primary object of this institution is a determination if possible of the nature of cancer and what may be accomplished for its relief. The work so far projected includes a careful clinical study of cases and of the pathological and histological elements found in every fresh speci-

men removed, together with a bacteriological examination and a systematic endeavor to cultivate in every known culture medium whatever parasites are obtained. He states that the results so far obtained have been very striking. In nearly every case of cancer that has been examined in a fresh state it has been possible by improvements in technique to find present in vast numbers bodies which cannot be other than parasites. While not prepared with a definite conclusion, he states that both cultures and inoculations have been so often successful as to leave little doubt in the minds of those who are doing the work that cancer is a parasitic disease.

Justus's Test for the Diagnosis of Syphilis.—

R. C. Cabot and P. S. Mertins, writing in the *Boston Medical and Surgical Journal* of April 6, 1899, confirm the value of this test. It consists essentially of a marked fall in the hemoglobin of the blood after an inunction of mercury. In diseases other than syphilis no such fall is observed. Cabot and Mertins found that seven cases of syphilis in the active stage lost 21 per cent of hemoglobin after one inunction. That this was not due to errors in technique is shown by the marked contrast obtained in the control cases; of these, only two out of thirty-three showed any considerable change after the inunction.

Slight gains and slight losses are recorded by all within the limit of error except two cases. One of these was a case of tertian malaria in which a chill occurred just after the inunction. This is sufficient, they think, to account for the loss of 10 per cent of hemoglobin. The other was a case of chlorosis; in this a typical positive reaction was obtained with a loss of 13 per cent in hemoglobin. So far as it goes this case certainly tends to diminish the value of Justus's test. No evidence of syphilis was present.

Frequency of Enlargement of Epitrochlear Glands in Diseases Other Than Syphilis.—

Richard C. Cabot (*Philadelphia Medical Journal*, April 8, 1899) says that clinicians still agree that enlargement of the epitrochlear glands is of some significance in the diagnosis of syphilis. He recently examined the epitrochlear region in eighty-two patients taken at random from the out-patient clinic of the Massachusetts General Hospital. Of these, forty-six showed enlargement of the epitrochlear glands and thirty-six did not. Of the forty-six patients, 19 per cent admitted having had syphilis. Of the thirty-six nega-

tive cases, six, or 16 per cent, admitted syphilitic infection. Of the forty-six positive cases, ten showed glands only on the right side, nine only on the left, and twenty-seven showed them on both sides. Children showed glands much less frequently than adults.

His observations confirm the conclusions that the epitrochlear glands are frequently found in cases showing no signs or history of syphilis, and that this enlargement is frequently absent in syphilitic cases; hence the deduction that epitrochlear adenitis is of no importance in the diagnosis of syphilis.

The Nutritive Value of Petroleum Emulsions.—

The *Boston Medical and Surgical Journal* of April 27, 1899, refers editorially to Hutchinson's observations upon petroleum substitutes for cod-liver oil in the treatment of tuberculosis. He employed a well known and widely advertised emulsion of an exceedingly pure petroleum, and administered thirty cubic centimeters, the usual daily dose, to a healthy man, who was kept on a constant diet containing some fats. The feces were collected, dried, and the fat extracted by ether. On separating the petroleum from the other fats in the extract, it was found that exactly the same amount of petroleum was present in the stools as had been ingested in the emulsion. Hutchinson is of the opinion that petroleum is not absorbed by the human intestine, and that therefore it cannot be regarded as in any sense a food. Systemic effects from the use or petroleum cannot be obtained. Whether it has a local action upon the intestines has not yet been determined.

A New Solution for Preserving Blood-corpuscles.—

Hayem, before the Société de Biologie (*La Presse Médicale*, April 19, 1899), stated that he had experimented with a large number of solutions, diabetic urine, etc., to obtain the best conservation of the red corpuscles. The instability of many of these solutions, however, made the results somewhat uncertain. The best fixing solution he found to be the bichloride of mercury, but unfortunately this precipitates albumin and often leads to an adhesion of the corpuscle. He recommends the following solution:

Distilled water	200 grammes.
Chloride of sodium	7 grammes.
Sulphate of sodium	5 grammes.
Solution of iodo-iodonate	3 to 4 Cc.

This latter solution is made by adding 25 grammes of iodide of potassium to 500 grammes of distilled water. To this metallic iodine is added in excess of what the solution will dissolve.

SURGERY.

The Urine Segregator in the Diagnosis of Diseases of the Urinary Tract.—

M. L. Harris, before the Surgical Section of the New York Academy of Medicine (*Medical Record*, April 1, 1899), read a paper and reported cases showing the value and simplicity of his method of obtaining the urine separately from the kidneys. During the past year he has three times successfully removed the kidney for primary unilateral tuberculosis. The larger proportion of suppurative affections and new growths are unilateral. He suspects that some of those which are grouped under the head of nephritis, or Bright's disease, are primarily unilateral. He has examined one case where casts and albumin all came from one side. He says that when the pathological process has been located in the kidney, the observation is not ended, as we must learn not only the quality but the quantity of work done by each kidney. To designate the amount of work done he uses the term "functional capacity," and next to knowing which side is diseased, he considers this the most important.

In order that we may have a fixed standard to guide us in all cases, Harris has determined the amount of urine eliminated per kilo per minute by a healthy individual with normal kidneys. Recognizing, of course, that considerable variation in the amount of elimination through the kidneys takes place from time to time, still for an ordinary individual on a normal diet the average is very constant. The average quantity he has found to be .016 cubic centimeter of urine per kilo per minute, containing two per cent of urea, or .008 per kilo per minute from each kidney.

In order, then, to find the functional capacity of the kidneys in a concrete case, we divide the quantity of urine collected from each kidney in cubic centimeters by the actual time consumed in its collection, and this by the weight of the person in kilos. The quotient, multiplied by the percentage of urea which the urine is found to contain, gives the work being done by each kidney per minute per kilo. This amount compared with the normal standard (two per cent of .008 for each kidney, or two per cent of .016 for both) gives us the relative amount of work done. Taking 1 as the normal standard for each kidney, the above terms reduced to a fraction show at once the "functional capacity" of each kidney. Any examination which does not estimate the functional capacity Harris considers incomplete, as it is of the greatest importance both as regards diagnosis

and prognosis. As the normal standard is computed for persons in health, and as most examinations are made on those suffering from some ailment, it is found, as was to be expected, that the functional capacity usually falls below the standard.

All examinations should continue at least thirty minutes if possible, on account of the occasional alternating activity of the two kidneys. The importance of this is well shown by the first case mentioned. Had the examination concluded at the end of ten minutes, Harris would have had about ten cubic centimeters of purulent urine from the diseased kidney and nothing from the healthy one, and would thus have beeu left in ignorance of its condition; while upon continuing the examination twenty-five minutes he obtained twenty-five cubic centimeters of clear urine from the healthy kidney. He sets thirty minutes as an arbitrary interval, simply from his present experience.

The functional capacity figures out very closely the same, regardless of the time of day when the examination is made or the quantity of urine passed. As the quantity of urine rises and falls, so inversely rises and falls the percentage of urea. He illustrates this fact by some examples:

Mrs. H——.

Patient's weight	62 kilos.	
Time	25 minutes.	
	Right.	Left.
Quantity	11 Cc.	14 Cc.
Urea	1.25 per cent	1.55 per cent.
Functional capacity	0.55	0.87

Mrs. B——.

Weight	59 kilos.	
Time	10 minutes.	
	Right.	Left.
Quantity	60 Cc.	66 Cc.
Urea	0.075 per cent	0.075 per cent.
Functional capacity	0.47	0.52

In the first case the quantity is small (11 and 14 Cc. respectively in twenty-five minutes), while in the latter it is enormous (60 and 66 Cc. in ten minutes), being excreted over twelve times as fast in the latter as in the former. Still the functional capacity is not increased, but remains within proper limits. When one kidney is absent, or its function destroyed or suspended from any cause, the functional capacity of the opposite kidney is proportionately increased, as in the case of Mrs. H——:

Weight	55 kilos.	
Time	20 minutes.	
	Right.	Left.
Quantity	None	14 Cc.
Urea	.....	2.3 per cent.
Functional capacity	.....	1.82

The right kidney was found practically destroyed by tuberculosis and suppuration. In the case of Mrs. S——, with one active kidney, the functional capacity was found to be 1.96.

Mrs. G——.

Weight		52 kilos.
Time		30 minutes.
	Right.	Left.
Quantity	None	12.5 Cc.
Urea	.....	1.85 per cent.
Functional capacity	.....	0.8

Notwithstanding the fact that no urine was obtained from the right side, the functional capacity of the left kidney is only 0.8. This is a case of movable right kidney, which at the operation was found almost inverted, with the ureter sharply flexed about four centimeters below the pelvis. The kidney was active, but when displaced the pelvis emptied itself periodically, and the examination was made at a time when no urine escaped. It will thus be seen that the "functional capacity" may have considerable diagnostic value in aiding us to determine the nature of a unilateral flow.

Peripheral Nerve Transplantation.—

Reuben Peterson, in the *American Journal of the Medical Sciences* for April, 1899, reports a case where the sciatics of a dog were transplanted successfully between the median ends of the ulnar nerve of a man.

Nerve transplantation is an exceedingly rare operation and one which was made necessary by a solution of continuity in the nerve trunk, which cannot be overcome by the direct suturing of the distal to the proximal end. The value of nerve transplantation is difficult to estimate because of the few cases which have so far been reported.

In the case reported by Peterson four centimeters of the sciatic nerve of a young dog was removed and sutured between the divided ends of the median nerve with kangaroo tendon. The ulnar nerve was treated in a similar manner. A distinct return of sensation in the anesthetic area is noted as taking place the following day. About two weeks after the operation the hand had a more natural color, and sensation had returned almost over the entire surface. The strength of the adductor muscles of the thumb was markedly improved five weeks after the operation.

The article in question gives an extensive bibliography and closes with the following general conclusions:

1. Transplantation of a peripheral nerve segment to bridge over

a gap between the two ends of a resected nerve is a legitimate surgical procedure.

2. Under favorable conditions at least partial and at times complete restoration of sensation and motion may be expected to follow the operation.

3. Regeneration of the degenerated peripheral end is due to down-growths from the axis-cylinders of the central end.

4. From the slowness of this process the longer the time after operation, the more favorable will be the results.

5. Sensation may return very early after operation, and as a rule precedes return of motion.

6. This rapid return of sensation is not due to down-growth of axis-cylinders or to conductivity of the transplanted fragment, but must be explained by collateral nerve supply.

7. In many cases very early return of motion after transplantation may be due to vicarious movements of other muscles than those formerly paralyzed, and not to a regeneration of the latter's nerve supply.

Wounds of the Heart.—

G. Marion, in *La Presse Médicale* of March 29, 1899, describes the case of a man who had made an attempt to commit suicide by a shot in the precordial region. He was brought to the hospital unconscious. After a time he was able to speak and complained of a severe pain in the epigastric region. His respiration was regular and easy and the pulse rapid. When examined he was found to be conscious and was able to describe the position in which the revolver had been held at the time the shot was fired. There was no vomiting, and hemorrhage was slight. The ball penetrated the chest at the upper border of the third rib, three centimeters to the left of the sternum. The precordial region presented nothing abnormal excepting the wound of entrance, but the epigastric region was very tender and the abdominal walls firmly contracted. Percussion over the abdomen revealed nothing abnormal. Later, with improved illumination, it was noted that the patient was cyanotic.

The reporter was of the opinion that the ball had penetrated the abdomen, and an exploratory incision was made, which showed the diaphragm intact. The symptoms of the patient continued to grow worse, and resection of the cartilage of the fifth, sixth, and seventh ribs was made. The pericardium was opened and was found to be filled with fluid and clotted blood. The removal of the

clots was followed by a sharp spurt of blood from the torn ventricle, and the patient died almost immediately. Examination showed that the ball had traversed the ventricle, making its exit posteriorly, where it made a ragged opening in the ventricular wall.

It is evident that the opening was too large to admit of rapid suture. The author speaks of the difficulty of operating within the pericardium under these circumstances, as the field is obscured by the rapidly flowing blood and the imperfect illumination.

An interesting circumstance in this case was the preponderance of abdominal symptoms, which led to an error in diagnosis; also the absence of shock and severe symptoms with so grave an injury to the heart.

Relief of Ear Vertigo by Removal of the Incus.—

C. H. Burnett, in the *American Journal of the Medical Sciences* for April, 1899, reports his experience in ear vertigo, which he prefers to the term tympanic vertigo. He refers to the fact that most forms of aural vertigo are termed Ménière's disease. The latter is indeed ear vertigo, but all forms of aural vertigo are not Ménière's disease. He refers all ear vertigo to increase of pressure in the labyrinth. The paroxysmal nature of the forms of ear vertigo he explains by claiming that they are due to temporary retraction and impaction of the stapes in the oval window, or to temporary engorgement of the labyrinth from within. Ordinarily, compensatory yielding toward the drum cavity is sufficient to prevent undue pressure. These yielding points are stiffened in chronic middle-ear catarrh, and the liability in such cases to impaction of the stapes can be overcome by removal of the incus. He has thus liberated the stapes in twenty-seven cases of ear vertigo. The relief was not obtained immediately in all cases, and in some the benefit was more marked than in others. In some extreme cases very disabling vertigo was relieved almost immediately by the operation.

The Surgery of Peritoneal Tuberculosis.—

Geo. W. Crile, in the *Bulletin of the Cleveland General Hospital* for January, 1899, says the surgical treatment of tubercular peritonitis now rests upon a solid foundation. This disease if left alone or treated by medical means usually terminates unfavorably. The result of operative treatment in tuberculosis of the peritoneum is more promising than that of tubercular process in almost any other tissue. Good results seem to have been obtained by techniques differing in every essential excepting that of turning out the fluid. The cases in which after the evacuation of the fluid from the cavity

other fluid was injected, or some preparation of iodoform employed or the powder dusted in the wound, or in which oxygen was injected, or in which the cavity was washed out with salt solution, all showed like improvement. In short, it appears that any method beyond that of opening the peritoneal cavity or of evacuating the fluid seemed to yield about equally good results. In the statistics there have been but few deaths from the operation itself, so that the mortality need not be a factor in considering the advisability of performing an operation for this disease, whose tendency is to cause death unless relieved by such procedure. As to the percentage of cures to be expected from operative procedure, in collecting all the cases that could be found up to the present time, there were about 80 per cent of cures. Clinical experience shows that unless some contraindication to an operation exists, every case of tubercular peritonitis ought to be operated upon as early as the diagnosis is made.

The Position of the Head in Anesthesia.—

An editorial writer in the *Therapeutic Gazette* of April 15, 1899, states that the commonly accepted notion that the head should be pulled backward if the breathing becomes labored in anesthesia is not correct. While this position will pull the epiglottis away from the glottic opening, it at the same time presses the soft palate across the base of the tongue so as to effectually occlude respiration through the mouth. If in all cases the nose were quite free, there would be little hindrance to the entrance of air into the chest, but in many cases the nostrils are narrowed or obstructed by growths, so that it is difficult for respiration to be carried on. The correct position of the head, he says, is to draw it directly toward the anesthetist in a line with the body or slightly forward. In this way the glottis is drawn forward and the soft palate forms no hindrance to the passage of air from the mouth into the larynx.

The second point of importance is that the tongue should not be drawn out and over the lower teeth, but outward and slightly upward, as this movement directly pulls the epiglottis away from the glottic opening.

Diagnosis of Appendicitis.—

Robert T. Morris, in the *New York Medical Journal* of April 8, 1899, discusses the errors which he has made in 228 consecutive cases of appendicitis in which there was an operation. The errors amount to seven in number, and include one each of old typhoid fever complications, peritoneal tuberculosis, cancer of appendix, congestion of appendix, hysteria, pneumonia, and sequela

of measles. He makes the statement that the number of errors is small compared with the total number of cases, from which he concludes that appendicitis is one of the most readily diagnosed of all diseases. In four of the cases in which an incorrect diagnosis was made, the operation was of benefit to the patient. He states that he has always opposed the removal of the appendix unless it was the seat of definite infective ulcers. There were two cases in his list in which he thought it best to operate, although there were no signs of infection; these were cases of twisted appendix with inclusion of mucus and symptoms of nausea and of local discomfort.

The Bottini Operation.—

Ramon Guiteras, in the *New York Medical Journal* of April 29, 1899, says that this operation is one of the most important that has been devised in recent years. He discusses the various forms of prostatic hypertrophy, in all of which he claims that the Bottini operation is of value. He thinks that it will ultimately supersede ligation of the iliacs, resection of the vas deferens, castration, and prostatectomy. He lays especial stress upon the value of the catheter in diagnosis, which should be combined with careful rectal exploration. He gives a description of the instrument which is employed, and the article is accompanied by two cuts which diagrammatically show the relation of the enlarged prostate to the instrument when introduced, and the manner in which the cautery blade is drawn through the hypertrophied tissues. He states that this procedure for prostatic hypertrophy exposes the patient to little danger, gives relief, and diminishes the amount of residual urine.

Traumatic Cerebral Edema.—

J. W. Courtney, in the *Boston Medical and Surgical Journal* of April 27, 1899, gives a critical study of the pathology and surgical treatment of this condition. A final summary of all the evidence at his command shows that traumatic cerebral edema should find no place as a surgical or clinical entity. It is primarily the inevitable sequence of contusion. This condition of the brain and its meninges is most commonly met with accompanying hemorrhage and laceration. The extent and seat of these conditions determine the extent of the accompanying edema. The brain itself in most cases is able to rid itself of the edema through its venous channel. The factors which enter into the production of this condition are such as to preclude the possibility of operative relief. The condition may cause death, but when so produced the fatal termination is due to anemia of the bulb.

THERAPEUTICS.

Orthoform in Diseases of the Nose and Throat.—

A. Logan Turner, in *Progressive Medicine* for March, 1899, says that a remedy possessing the advantages of cocaine without its disadvantages would prove of great value. Such an agent has not been found in orthoform, though under certain conditions it has been shown to be a valuable local anesthetic devoid of toxic properties. This drug, introduced to the notice of the profession by Einhorn and Heinz, is a white, crystalline powder, light and bulky, almost insoluble in water, and without taste or smell. It is also an antiseptic. Its hydrochloride is crystalline, very soluble, and possesses anesthetic properties, but owing to its acid reaction it is somewhat irritating upon delicate surfaces. The absence of taste and smell enhances the value of the drug as a therapeutic agent in diseases of the nose and throat, while its insolubility, on the other hand, prevents its effective action upon intact mucous membrane. When applied to the tongue or to the inner surface of the cheek a numb sensation ensues in about five minutes, but there is little real anesthesia.

Yonge, of Manchester, who has experimented with orthoform in relation to throat affections, found that in the larynx reflex irritability was reduced, and a peculiar feeling somewhat resembling that produced by cocaine was experienced by the individual to whom it was administered, though this soon passed off. A laryngeal probe could be passed, however, and its presence tolerated without inducing the spasm or cough which had previously followed the use of that instrument. In the nose it has been employed with the view of diminishing the irritability in attacks of hay-fever.

It is, however, upon ulcerated surfaces that the true value of orthoform as an anesthetic can be gauged, for it is thus brought in contact with the exposed nerve endings, and being sparingly soluble its action is sustained for a long time; in this way it has been proved to be of great benefit. It has, too, the additional advantage of being non-toxic and antiseptic. Anesthesia commences in from five to ten minutes after its application, and this may last from a few hours to five or six days. Kallenberger found that the average duration of anesthesia was for a period of thirty-five hours, while Neumayer, after insufflating it in laryngeal ulceration, found that the pain and irritation were allayed sometimes for days at a time.

Yonge describes the various preparations that may be employed.

In the form of the crude powder it can be readily insufflated, and if the surface of the pharyngeal or laryngeal ulcer has been previously cleansed, anesthesia is produced in a few minutes, and the act of swallowing can be carried out without the discomfort or pain previously complained of. Orthoform pastilles may be employed. He has made use of a saturated solution of orthoform in collodion, forming a sort of protective varnish. As smarting is at first produced by this preparation, the surface of the ulcer may be brushed with cocaine first. An orthoform spray also forms a suitable means of application, because, on the evaporation of the spirit with which it is made up, the precipitated powder is left in contact with the surface. It may be used as an ointment, made up with some suitable base, its strength being 10 per cent. And, lastly, a 10-per-cent aqueous solution of the hydrochloride has been prescribed as a paint.

Yonge did not find the drug of any value in catarrhal pharyngitis, or in quinsy, nor was its anesthesia sufficient to permit of any surgical operation being carried out, facts which support the non-utility of the remedy on unbroken surfaces.

Lichtwitz and Sabrazes found the drug absolutely non-poisonous, and where dysphagia was a prominent symptom, as in laryngeal tuberculosis and laryngeal cancer, it gave immunity from pain for from twenty-four to forty-eight hours. His own experience with orthoform, in laryngeal ulceration, confirms the views expressed by these and other observers.

The Treatment of Pneumonia with Large Doses of Digitalis.—

A. Fraenkel, in an article taken from *Die Therapie der Gegenwart* for January, 1899 (*Medical and Surgical Review of Reviews*, February, 1899), says the publication of Traube's experiments and clinical investigations in 1850 first brought digitalis into common use in the treatment of febrile affections. He found that considerably larger doses were necessary than in heart disease. In the latter the primary object is to regulate the heart's action; in febrile affections, to lower the body temperature. The latter property of digitalis is quite subordinate to the former, and the two are not necessarily present at the same time. The antipyretic action is attributed by Traube to a paralysis of the vasoconstrictors and consequent increased loss of heat. Another point he brought out was that if the temperature once fell the result was progressive, so that it either did not rise again or rose slightly, even during an exacerbation of the disease. This important work of Traube was more or

less forgotten, until revived by Petresco, of Bucharest, and others, who have not hesitated to give to pneumonia patients very large doses of digitalis. Lop has given four drachms a day. Petresco found that with this form of treatment the temperature fell 5.4° to 7.5° F. in twenty-four to seventy-two hours, and the pulse from 110 or 115 to 60, 30, or even 24. He never observed symptoms of intoxication, and found that the mortality in the military hospital at Bucharest fell from 20 or 25 to 1 and 2 per cent. He agrees with Traube that digitalis is capable of cutting short an attack of pneumonia. Several eminent French authorities have confirmed Petresco's statements, though in Germany the new method has received scant support.

During the past year Professor Fraenkel has tried it in a somewhat modified form. Remembering Traube's statement that even a moderate dose of digitalis may cause bradycardia and irregularity of the pulse in pneumonia, when given a short time before the crisis, he has limited the treatment to cases seen during the first three days, and has excluded those with a small and very frequent pulse and marked cardiac weakness. In this he differs from many physicians, as the treatment has been especially recommended where heart failure is feared, the antipyretic effect being looked upon as of quite secondary importance (v. Barth, *La Semaine Médicale*, July 22 and Dec. 25, 1896). He never gave more than one drachm a day, or a total amount not exceeding 3½ drachms. The only ill effect he observed was nausea. If it persisted he administered the drug per rectum. Such extreme falls of temperature as are figured in Lop's charts were not observed, but after 1 or 1½ drachms had been given the temperature fell gradually, reaching the normal on the third day; the pulse fell at the same time. Irregularity of the heart's action never occurred, though one patient was over 70. The evolution of the local process is quite unaffected by the treatment. Fraenkel's experience leads him to advocate large doses of digitalis for selected cases, though he does not agree with Maragliano that the drug directly neutralizes the toxins of the pneumococcus.

Salicylate of Sodium in the Treatment of Pneumonia.—

William C. Sebring, in the *Medical Record* of April 22, 1899, states that an extended clinical experience, now numbering nearly seventy-five cases, warrants him in stating that salicylate of sodium and salicylic acid are nearly specific in the treatment of lobar pneumonia. He employs the drug in from five- to ten-grain doses every two hours, and combines it with such other remedies as are symp-

tomatically indicated. He believes that his results justify the following conclusions:

1. In the beginning of an attack it quickly quiets the tumultuous heart.

2. It acts as a sedative to the general nervous excitement that is prevalent through that period; indeed, it acts as a hypnotic in some cases all through the course of the disease. A fair proportion of the patients have slept a major part of the time, until recovery had become well established.

3. It almost surely and quickly gives relief from the pleuritic pains.

4. It seems to inhibit the manifestation of malign mental symptoms. Thus far none of the patients have developed the least delirium after beginning to take the drug, except five cases of drunkard's pneumonia, in which the delirium preceded the disease.

5. The pulse remained full and not overrapid to the end, except in one case. Cardiac symptoms due to the disease itself have been unnoticed, and symptoms of a "tired heart" do not often occur.

6. After the first few doses of the drug the patient will perspire freely as long as the diseased condition of the lungs persists, but either from this cause or from some other that the author is not cognizant of, the temperature seldom exceeds 103° F.

7. The cases will show a far smaller percentage of complications than is usual.

8. In nineteen out of twenty cases the disease will subside by lysis.

9. The length of time required for recovery is less than is the rule with patients that recover under the usual treatment and by lysis.

10. The infected lung tissue progresses to resolution more slowly than it does with the average case, though complete recovery from an attack—that is, return to normal health—is more expeditious.

11. There is a marked diminution in the severity of the disease, all conditions being taken into consideration.

In seeking a *modus operandi* for the drug, the author thinks that perhaps it is found in the observations of Blumer, that salicylic acid in one-per-cent solution is fatal to the pneumococcus.

Mydriatics and Myotics in General Practice.—

J. A. L. Bradford, in the *Medical Age* of April 25, 1899, gives the following directions as to dilating and contracting the pupil in many conditions met with by the general practitioner:

1. Mydriatics and myotics should never be used without clear indications.

2. Mydriatics should be used in iritis, cyclitis, choroidoretinitis, and keratitis, and when the pupil is small or not already dilated, after severe injuries to the ciliary region.

3. Mydriatics should never be used where the pupil is already dilated or where there is any tendency to increase of intra-ocular tension, excepting cocaine.

4. Myotics should always be used when there is a tendency to increase of intra-ocular tension and the pupil is dilated.

5. Myotics should not be used where there is a ciliary congestion and pupil already contracted.

6. In threatened or perforating ulcers of the cornea, if central, mydriatics should be used; if peripheral, myotics.

7. For dilating the pupil for ophthalmoscopic examination, use homatropine, one- to three-per-cent solution, as the effect soon passes off.

8. Cocaine, being exceptional in its operation, may be used to dilate the pupil where there is a shallow anterior chamber, or even high tension, in old people when needed for ophthalmoscopic examination.

9. Never use atropine in glaucoma.

The X-Ray in Therapeutics.—

In the January issue of MEDICINE we reported the observation of Schiff on the treatment of lupus by the *x*-ray. At the meeting of the Imperial Academy of Physicians of Vienna, before which the paper of Schiff was read, Moriz Kaposi in the discussion expressed doubts as to the value of the method, particularly as it was claimed that the results were good in such widely differing affections as lupus erythematodes and lupus vulgaris, in one there being a production of new tissue and in the other a simple inflammatory process. Since that time there have been three reports confirming the value of the *x*-ray in the treatment of lupus. In the original paper of Schiff he referred to the observation of Finsen on the value of light in the treatment of this disorder. The action of the *x*-ray is very obscure, as it is not well understood whether it causes atrophic changes or chemical decomposition in the tissues. In any event it seems to exercise a favorable influence upon the lupoid process of differing character.

Interesting in this connection is the report of Ousset and Bedart in the *Echo Medical du Nord* of November 13, 1898, in which they describe the case of a young woman with chronic tubercular perito-

nitis, the course of the disease not having been influenced by other therapeutic measures; but it yielded to the action of the *x*-ray. The tube in this case was placed twelve centimeters from the abdomen, and each sitting was of about a half-hour's duration. After fifty applications all evidence of the disease had disappeared.

Thoracic Aortic Aneurism Treated by Introduction of Silver Wire with Electricity.—

E. S. Carson, in the *Philadelphia Medical Journal* of March 4, 1899, concludes the description of a case treated by this method, as follows:

1. Quick coagulation of blood follows after introducing the current of electricity.

2. Improvement in the left radial pulse was due to electrical stimulation.

3. Relief of dyspnea and cough for the first few hours follows treatment.

4. But little shock or depression to the patient results from this method.

5. Slight hemorrhages attending or following the operation are probably due to old clots.

6. Unfamiliarity with the power of the cells of the battery entails lack of knowledge as to the milliamperage in use.

7. The constriction of the sac remarked upon prevented the descent of the wire so that only the upper part of the clot was affected, and hence the results were incomplete.

8. Owing to the advanced state of the lesion it is doubtful whether a cure could have been effected under any conditions.

The Treatment of Gall-stones.—

W. L. Carr, in the *New York Medical Journal* of April 22, 1899, thinks that the predisposition to gout and rheumatic disorders is largely concerned in the production of gall-stones. The possibility of the bacterium coli commune being a cause of their formation is due to the fact that it produces a catarrhal condition of the intestinal tract. The treatment of biliary colic consists in relieving the pain by morphine and atropine, to which large draughts of water may be added. The preventive treatment or the management during the intervals of hepatic colic he divides into dietetic and drugs. For diet he especially enjoins the strict elimination of all foods slow of digestion and those which are especially rich in fats and sugars. He thinks that chloroform, ether, and turpentine,

which have been held for many years as having power to dissolve gall-stones, have really little action in this direction. Sweet oil he regards as a valuable adjunct, but points out that in many cases the saponified masses of oil are mistaken for gall-stones. Among the drugs which are considered valuable in stimulating the flow of bile and increasing its solvent properties are salicylate of sodium, cholate of sodium, succinate of sodium, and the succinate of iron. Locally he recommends massage of the abdomen with gentle manipulation of the region of the gall-bladder. In impaction surgical means will alone afford relief.

Influence of Alcohol on Muscular Work.—

Destree, in the *Quarterly Journal of Inebriety* for January, 1899, gives the results of his experiments upon the effect of alcohol in the production of fatigue, and on the amount of work which can be accomplished under its influence. He thinks that alcohol has a favorable effect on the work product whether the muscle is weary or not. This favorable effect appears almost immediately, but is very transitory. Immediately afterward alcohol has a very decided paralyzing effect. About a half-hour after taking alcohol the muscular power reaches a maximum that subsequent doses increase with difficulty.

The paralyzing effect of alcohol outweighs the momentary stimulation, so that the total work product obtained with the use of alcohol is less than that obtained without it. In other words, alcohol is a deceptive means of dulling the sense of fatigue, but its action is momentary and in the end injurious, the paralyzing effect upon the nervous system increasing rapidly and with such force that any momentary good effect cannot counterbalance it. Similar experiments with tea, coffee, and kola showed that the stimulating effect of these drugs, while less marked than that of alcohol, is continued longer and is not followed by a paralyzing effect as is the case with alcohol.

Sodium Bromide in the Treatment of Chronic Morphinism.—

J. C. Verco, in the *Australasian Medical Gazette* of March 20, 1899, describes the case of a man 40 years of age who had been addicted to the use of morphine for the past five years, the last two of which had been marked by largely increasing doses. As soon as he came under observation, bromide of sodium was given in forty-five grain doses combined with half a grain of morphine at intervals of about six hours. Within the next ten days the morphine was

rapidly withdrawn, but the bromide of sodium was kept up. The rapid reduction was not attended by the usual symptoms which accompany the withdrawal of morphine, but the patient was very much reduced in strength before the treatment was begun. The large doses of bromide secured sleep and prevented the craving for the morphine. During the progress of the treatment there was marked mental aberration, but this the reporter attributes to the prolonged use of the morphine, though he admits that it may have been aggravated by the bromides.

The writer thinks that a dose of half a drachm of sodium bromide every three hours will at the end of a day or two completely overcome the craving for morphine.

Alcohol an Antidote for Carbolic Acid Poisoning.—

A. M. Phelps, in the *New York Medical Journal* of January 14, 1899, calls attention to the marked antagonism between alcohol and carbolic acid. He states that he has frequently seen Dr. Powell, at the Post-Graduate Hospital, pour upon his hands some pure carbolic acid and in a few minutes wash it away with alcohol, and no escharotic action followed. At the present time he frequently flushes abscess cavities by washing them out with pure carbolic acid, and a few minutes later with pure alcohol. Phelps is of the opinion that we have in alcohol a specific against the escharotic action of pure carbolic acid.

The observations of Phelps and Powell are of striking interest and merit the widest publicity, both in the profession and among the laity. The extended use of carbolic acid both as a domestic remedy and in medical practice has enormously increased the cases of poisoning by the use of this drug. It is claimed that the acid taken into the stomach is immediately neutralized by alcohol.

Apomorphine in Acute Alcoholic Delirium.—

According to the *Quarterly Journal of Inebriety*, apomorphine holds a conspicuous place among the remedies in this disease. The indications for its administration are muscular rigidity, convulsions, a full, bounding pulse, and usually a stomach which contains an irritant. It does the work in minutes which takes hours for the bromides or chloral. A case is stated of a physician who was called to see a man who was said to be in convulsions. Upon entering the house the patient was found upon the floor with five men holding him down. His face was flushed, pulse bounding, and he had violent convulsions every ten minutes. He was well known as a habitual

drinker, and a strong odor of alcohol pervaded the room. One-tenth grain of chloride of apomorphine was administered hypodermically. In four minutes there was free emesis, rigidity gave way to relaxation, excitement to somnolence, and without further medication the patient sank into a deep sleep. While apomorphine acts well in these cases, its use is usually contraindicated in cases of delirium tremens, in which there is a weak heart.

Banana Flour.—

According to the *Chicago Record* of April 22, 1899, a very nutritious and valuable flour called "bananine" is prepared. With a view to making more use of this as a cheap and successful food, France has sent a commission to the United States and Central America for the purpose of studying the banana industry in the countries where this fruit grows most freely. M. Charles Patin, of Belgium, has also been investigating the subject and has come to the conclusion that bananas are destined to produce an increasingly valuable cheap food for the working classes in Belgium. It is easy of digestion; the fresh fruit or the flour is particularly well suited for the use of delicate persons. To obtain the flour, the fruit when ripe is peeled and cut into thin transverse slices, which are then completely dried in the sun or a furnace, and in this condition are ground to a powder. From this flour delicious bread and cakes may be prepared, and at a far cheaper price than would be demanded for wheat flour.

The Bimuriate of Quinine and Urea in Typhoid Fever.—

Professor Da Costa is quoted by A. G. Ellis in the *Medical Age* of April 25, 1899. This salt is not official and seems to have attracted little attention. Da Costa reports that in one case of typhoid fever under his care the temperature ran high, despite the fact that frequent recourse was had to sponging. In addition there was a double pneumonia with here and there a spot of consolidation. The temperature, which had been as high as 105.4°, was soon reduced to normal and the patient made a rapid convalescence. He has used the drug only in cases of typhoid fever where an elevated temperature persisted. In the case mentioned two grains of quinine had been administered daily, but with no results. The bimuriate of quinine and urea was used hypodermically, a use to which its high solubility and freedom from pain and abscess production particularly lends itself. Da Costa especially directs attention to the value of this drug in mixed infection of malaria and typhoid.

The Use of Nappeline as a Substitute for Morphine and to Overcome the Pain Following the Withdrawal of Morphine.—

M. Rodet, in *La Presse Médicale* of April 5, 1899, claims to have experimented extensively with various drugs in seeking a substitute for morphine that would overcome the atrocious pains which accompany the abrupt or gradual withdrawal of the drug. He claims that in nappeline we have a remarkable sedative for the nervous system which favors sleep. To obtain the best effects, the substitute is to be given hypodermically. It is readily soluble in distilled water. The dose employed is not definitely stated, but from the solutions employed it would seem as if about five grains had been given in a day. The author speaks of the feeble toxicity of the substitute, though in this he differs from other writers. Foster's Handbook of Therapeutics says that nappeline is almost identical in action with aconitin, but not so powerful, the dose being from one-twentieth to one-third of a grain.

Naphthalin in the Treatment of Typhoid Fever.—

Albert Woldert, in the *Journal of the American Medical Association* of April 15, 1899, affirms that the cold bath is the best treatment for typhoid fever, and he admits that it is impossible to sterilize the intestinal tract in the human species. The difficulty in most intestinal antiseptics he finds in their too ready solubility and the fact that they are absorbed before the action extends down the intestinal tube. He has employed naphthalin, giving it in powder or capsule in doses of from five to ten grains. In cases of adults not less than ten grains seems to be of service. In no case did the drug act as a cardiac depressant. It has no action upon the temperature. Digestion seemed to be improved. Nephritis was not observed from the administration of the drug. Care should be taken to secure a chemically pure drug, as irritating impurities are commonly found associated with it.

Local Absorption of Potassium Iodide.—

Ulry and Frezals, in the *Gazette Hebdomadaire* of January 1, 1899, have made a careful experimental study of the penetration of iodide of potassium into the eyeball, having been absorbed from the conjunctival sac. They have determined that the iodide of potassium placed on the conjunctiva in the form of an aqueous solution penetrates into the aqueous humor. They made parallel applications to determine the amount of salts found in the vitreous. When the drug was given by the stomach they determined that

there was an appreciable difference, the quantity being greater when the solution was used in the conjunctival sac. The simultaneous administration of the iodide permits of a considerable quantity being found in the anterior chamber.

The Treatment of Venereal Warts by Resorcin.—

Silvermintz (*Revue Pratique de Obstétrique a de Gynécologie*) uses a formula composed of 80 per cent of flexible collodion and 20 per cent of resorcin. Before applying the mixture the vegetations as well as the surrounding skin are carefully cleansed with alcohol and ether. Then the coating is applied. After a time it becomes detached and with it a portion of the vegetation. The second or third application is usually sufficient to remove the excrescences, which leave an irregular surface, the depressions of which mark the root of the papillomatous growth. These rapidly heal under the application of a drying antiseptic powder.

Zinc Collodion Paste in Epithelioma.—

A. G. Brown, in the *Therapeutic Gazette* of April 15, 1899, uses a mixture of equal parts of collodion and zinc chloride for the treatment of superficial epitheliomatous growths. He describes a growth of this character about three-fourths of an inch in diameter situated at the nasal canthus of the eye. The paste was applied, the application being renewed every second day. At each renewal the former application was removed with ether, each dressing being followed by the separation of a superficial slough. In this way the whole was taken away and the denuded surface healed under a boric acid dressing. The cosmetic results were favorable.

Iodothyrin in Place of Thyroid Extract.—

Sidney Kuh, in the *Philadelphia Medical Journal* of April 8, 1899, describes two cases of typical myxedema with apparent atrophic thyroid glands. In one of these cases desiccated thyroids was used, and in the other iodothyrin. There was a marked difference in the effect between the two; iodothyrin had very much less disagreeable after-effects than did the thyroid tabules. Gastric disturbance was not noted with iodothyrin, while the effects upon the myxedematous process and the general nutritional influences were as good as from compressed thyroids.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

The Use of Massage in Malpositions of the Uterus.—

William H. Rumpf, in the *American Gynecological and Obstetrical Journal* for March, 1899, says that in a paper read before the Gynecological Society a few years ago he strongly advocated the more general use of pelvic massage, and deplored the lack of enthusiasm with which this subject has been taken up. Aside from the fact that more space is devoted to massage in some modern text-books, the same condition prevails which existed a few years ago. This is due to the fact that proficiency in massage is difficult to acquire, and to the operative mania, especially in the treatment of retroflexions. He omitted any consideration of the history or technique of massage, and simply considered a few questions which occurred to him in connection with the subject. In his experience the retroflexions and versions, and the cases in which the uterus is drawn to one side by adhesions, are the only ones benefited by massage. He has treated a number of pathological anteflexions and prolapses according to this method, but has never seen a gratifying result. We all know what an important part retroflexions play in cases coming for gynecological treatment, and it is right here that massage has given him personally more satisfactory results than any other form of treatment. In this particular class of cases massage is indicated where pus and malignant disease may be positively excluded. These contraindications are, of course, not always easy to exclude, but, as has been frequently pointed out, the massage in itself helps us to make a diagnosis.

In typical fixed retroflexion with firm adhesions, thickening and infiltration of all ligaments, and large congested uterus, the dysmenorrhea, menorrhagia, backache, and vesical symptoms make the patient's life miserable. In these cases the author is convinced that massage can do more than any other form of treatment to relieve the pain and congestion and to gradually raise the uterus from its fixed surroundings. He has absolutely no faith in the use of electricity, and very little in tampons. He supplements the massage of the uterus by a general massage of the abdomen, in order to increase the tonicity of the intestinal tract. The proper attention to the bowels is, in all cases, most important. He still believes, as stated elsewhere, that oftentimes tampons get the credit for what is really due to cathartic pills.

By massage we can relieve pain, make the uterus mobile, and

improve the bladder and bowels; we can prepare the uterus for the proper use of pessaries, and insure a greater prospect of success for future operations. If a retroflexion is symptomatically cured, Rumpf believes we have gained a great deal. Certain it is that very many women become pregnant and bear healthy children when the uterus is freed from all adhesions and its normal tonicity restored.

In conclusion, the author says that massage is the most valuable adjuvant we possess in the treatment of retroflexions of the uterus. About 50 per cent of the cases require no other form of treatment. The remainder are prepared for the use of pessaries or for operations. Symptomatically, all cases may be relieved. The massage of the bowels should be performed in all cases in which constipation is present. Massage has not been satisfactory in cases of anteflexion or prolapse.

Crying in the New-born.—

S. Southworth, in the *Archives of Pediatrics* for March, 1899, cites the case of a primipara who was delivered of a strong male child, and as the mother's breasts were well developed and the child strong, instructions were given that the child be put to the breast every six hours for the first day and every four hours the second day, and that boiled water sweetened with sugar be given every two hours between the nursings. It subsequently transpired that as the child slept soundly between the nursings the latter part of the order was disregarded entirely, or the water given but a few times. At noon on the third day word was received that the child was ill, and on arrival at the house the nurse said that it had cried almost constantly for the past eighteen hours, as if suffering from colic, sleeping but little and passing no urine since the early hours of the morning. When the child was undressed marked priapism was noticeable, and the placing of the somewhat cool hand over the region of the bladder was followed by the discharge of some four to six drachms of urine of a turbid brown color. This left a yellowish-brown discoloration upon the napkin. Priapism immediately ceased, and the child, who had before been crying steadily, fell into so sound a sleep that the subsequent examination did not awaken him. The so-called uric acid infarctions of Virchow, formed by the deposits of uric acid and urates in the straight tubules and papillæ of the kidneys in new-born infants, have been recognized for some time as a possible source of irritation as they remain *in situ*, or are washed out by the scanty secretion of urine. It is extremely probable that much of the supposed pain of colic in the new-born is due to these sources of irritation in the kidneys, ureters, bladder, or urethra.

Boiled water given at intervals will dilute the urine and prevent or alleviate the discomfort. The rather unusual opportunity of observing matters in this case, together with the subsequent course of events, point clearly to the urine as the cause of the crying, whereas had no such observation been made, hunger and inanition might readily have been considered a sufficient explanation of the symptoms.

Organotherapy in Gynecology.—

W. A. Newman Dorland, in the *Therapeutic Gazette* of April 15, 1899, gives an excellent summary of the literature of this subject. The axiom of Christian Martin that "physiologically there is no difference between a woman with half an ovary and a woman with two ovaries, while there is a great difference between a woman with half an ovary and one with none," should, he thinks, be placed among the imperishable quotations in medicine. From his limited personal experience, which is most favorable testimony as to the value of ovarian extract, and from the extensive literature upon the subject, he formulates the following statements:

1. The ovaries, in common with other glandular organs of the body, exert an occult, but very positive, influence upon the general organism.

2. When this influence is removed, either by the natural atrophy of the glands at the climacteric, by destruction of the ovarian stroma from pathologic processes, or by extirpation of the organs, there results a series of distressing phenomena, including hot and cold spells, nervous and mental manifestations, and neuralgic attacks.

3. The administration of ovarian substance, or of the extract of ovarian tissue, is promptly and very generally followed by a marked amelioration of these symptoms.

4. The average dose required varies from two to five grains of the extract administered thrice daily.

5. The excessive doses of the remedy will be followed by cardiac and nervous manifestations, necessitating a diminution in the dose administered, or a complete, though temporary, change of treatment.

6. In some cases there appears to be developed a tolerance to the remedy whereby its effects are diminished in intensity. For this reason it is better to begin with small doses, and gradually increase the amount as may be indicated in the given case.

An Epidemic of Infantile Spinal Paralysis.—

Leo Newmark describes in the *Medical News* of January 28, 1899, four cases of infantile spinal paralysis occurring in a small village of

forty-nine inhabitants. Two cases occurred in brothers, and four days later a playmate of these two was affected. The fourth case occurred on a farm three miles distant, six days later; this latter seems to have been of a type of ascending spinal paralysis, undoubtedly myelitic in its character. At a considerable distance from these cases, one had occurred a month before the outbreak of this little epidemic.

The author reviews the entire literature of epidemics of this disease, the most extensive of which was reported from Vermont, where in an area of fifteen by twelve miles there occurred one hundred and thirty-two cases, a number probably representing about 90 per cent of the cases that occurred in this district. This disease bears a very striking resemblance to the acute infectious disorders, and the fact that well-marked epidemics occur lends additional support to the theory of the infectious nature of the disorder. The specific germ has not been identified, but Schultze has found the diplococcus of Weichselbaum in fluid taken from a lumbar puncture.

Veratrum Viride in Puerperal Eclampsia.—

H. R. Clanson, in the *Virginia Medical Semi-Monthly* of January 13, 1899, claims that we have in this drug a remedy of great power in the treatment of puerperal eclampsia. He claims that even in large doses, from ten to twenty drops of the tincture, given hypodermically or by the mouth every three minutes, it will produce profuse sweating and will lower and steady the heart's action, giving a fuller pulse with regular respiration. In some of the writer's cases he has used two drachms of the tincture in less than twelve hours. He supports his contention with the citation of seven cases, six of which were primiparæ. In five convulsions were antepartum, and in two postpartum. All of the cases recovered.

Undoubtedly the author makes a strong case in favor of the use of this drug. While much has been written on the use of saline solutions, bleeding, nitroglycerin, and other methods of treatment, there is nothing that precludes the use of this drug in addition to the remedies named.

"The Temptation of Skill."—

E. C. Savidge, in the *Medical Record* of April 29, 1899, has some very clever things to say in reference to operative gynecology. He emphasized the newness of the science of the diseases of women, which he thinks explains why some of its work has been tentative. The evolution of the new science transferred a large body of patients

from the medical man to the specialist—a group of specialists all eager for skill and glory. The field was so virgin that each bright man produced a new device or new instrument. The man with hospitals averaged about one hundred abdominal sections a year, and even small towns caught the enthusiasm, and young men felt the necessity of having at least one hundred "sections" to their credit.

A living patient after operation was the primitive goal. It took a certain number of years to establish how many patients could live through an abdominal section, and this was about all that was of value in the statistics. The author states that in one thousand cases applying to him for gynecological treatment, nearly one-tenth were women who had already been operated upon. The pressing decision of the near future is not how many may live through these operations, but what will be the results of operation upon the patient and in furnishing relief for the condition for which it is undertaken. The author discusses *in extenso* the various conditions for which operations are performed, and he lays special stress upon reparative work.

Formalin in Puerperal Sepsis.—

W. Fell, in the *Australasian Medical Gazette* of March 20, 1899, reports a case of instrumental labor which was followed on the second day by a sudden rise of temperature. On the fifth day the temperature reached 106°, which a uterine douche reduced to nearly normal, to be followed later by a return of the temperature. This process was repeated for a number of days, when a vaginal tampon was employed, made of strips of linen soaked in a six-ounce solution containing one drachm of formalin. Following this application the temperature fell at once to normal, and the patient made an uninterrupted recovery.

FORENSIC MEDICINE.

A Case of Probable Contrare Sexualempfindung.—

A late issue of the *Chicago Daily News* has an account of a case of some interest from a forensic standpoint. While we depend for details upon the report of a daily paper, it is probable that the main outlines of the case are correct. Charles L. Seibert was shot by a Mrs. Nettie A. Miller because he had married Hattie Leonard, a woman for whom Mrs. Miller possessed a strong affection. The

stories told regarding the shooting are somewhat conflicting. Mrs. Miller declares that Seibert entered her store and threatened her, and that this led to the shooting. According to Seibert's version, he was standing on the sidewalk several doors from Mrs. Miller's place when she came out of her store. As soon as he saw her he started to move away, stating that he had heard of the threats she had made, she having threatened to kill Miss Leonard as well as the man she had married.

The story told by Mrs. Seibert, who had for years been the object of Mrs. Miller's affections, is that she had lived with her for fourteen years and claimed to have been held under hypnotic influence. She stated that when she first lived with Mrs. Miller, she (Mrs. Miller) was taken sick, and during that time she fell desperately in love with Hattie Leonard. This infatuation deepened more and more as time went by. It grew so strong that Mrs. Miller forbade her going with any man or accepting the attentions of any one. Mrs. Seibert states that during the fourteen years that she was under the influence of Mrs. Miller she left four different times, and each time was forced to go back by the influence of this hypnotic power. She states that she is unable to explain, any further than that she tried to resist and could not.

Mrs. Seibert states that several times she was threatened by Mrs. Miller, and in 1889 she assaulted her for accepting the attentions of a drug clerk; she also threatened him at this time, and on this account they were compelled to stop going together.

In the account of the incident it is stated that Mrs. Miller has been twice married and never lived with either of her husbands. Her mother died some years ago in an asylum, and it is stated that her brother committed suicide in Milwaukee in 1885.

The case is meagerly reported, and consequently is of little value from a scientific standpoint. It is referred to here simply as showing one of those singular aberrations which sometimes lead to the commission of crime, and which it is so difficult to classify from the standpoint of responsibility. Aberrations of the sexual instinct are among the most striking stigmata of inherited nervous instability, but to say that every such person is irresponsible is to simply beg the question. Jealousy has furnished motives for crimes innumerable. The relation of motive and mental responsibility are not altered because the object of the affection happens to belong to the same sex as the perpetrator. At least two striking homicides of this character have occurred within a few years, in both of which the accused was acquitted on the plea of mental disease. We do not know how far

in each of these cases the testimony went in sustaining the theory of mental unsoundness, but the mere fact alone of the existence of an aberration of this kind is not sufficient evidence. The attending circumstances and other signs of mental defect must be taken into consideration in every case.

The Zellner Case Again.—

In the April issue of MEDICINE there appears a short abstract of an article by H. C. Wood in which he makes the Zellner case the text of an extended criticism of judicial methods. John V. Shoemaker, in commenting upon the same case in the *Philadelphia Medical Journal* of April 22, 1899, thinks also that there must be some grave dereliction on the part of individuals appearing as medical experts to justify the adverse criticism on this form of testimony which is sometimes delivered from the bench. Dr. Shoemaker's article is largely a criticism of Dr. Wood's position. A comparison of the two shows that both gentlemen are in a measure wrong. Like too many of these articles, that of Dr. Wood is a bit of special pleading on behalf of the experts for the plaintiff, while that of Dr. Shoemaker is a rejoinder on behalf of the experts for the defense. As a matter of fact, both gentlemen have somewhat overstated their side of the case.

New Ruling in an Action for Malpractice.—

In the *Western Medical Review* of April 15, 1899, a decision against Dr. Walter N. Courtney is referred to, in which a verdict was returned in favor of the plaintiff for $1200. The Supreme Court held that the preponderance of evidence was in favor of the defendant, one witness having testified for the plaintiff that the treatment was proper and two others for the defendant. The one witness for the plaintiff was a homeopathic physician, and the court announces the following as a rule of law: "In an action for malpractice, a physician or surgeon is entitled to have his treatment of his patient tested by the rules and principles of the school of medicine to which he belongs."

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

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ORIGINAL ARTICLES.

THE ALKALINITY OF THE BLOOD IN ITS PHYSIOLOGIC AND PATHOLOGIC RELATIONS.

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The reaction of the blood has been the subject of much investigation by physiologists, and has lately attracted the attention of pathologists, as serving, perhaps, to explain some of the phenomena of disease. Especially has the idea been advanced that the alkaline reaction of the blood is closely connected with the means by which the system defends itself against infection by microorganisms.

No originality of research is claimed for the present paper, which simply aims to put before its readers the results so far achieved by investigators, and to draw some practical conclusions from them.

Although physicians occasionally speak of the blood becoming acid, it is the universal result of experiment that the blood reacts continuously alkaline to litmus in health, and in all cases of disease investigated except cholera and diabetic coma.

It must be remembered, however, that while the reaction to litmus is alkaline, it contains salts which are of acid constitution, such as the bicarbonates and monohydrogen phosphates, so that its chemical effect may be that of an acid. The blood has, therefore, a power to absorb bases as well as acids, and this power is sometimes spoken of as its acidity. This may be of great importance in accounting for the solution of substances otherwise insoluble, such as the calcium phosphate of bones in cases of rickets and osteomalacia, and in making possible the separation of acid secretions, like the gastric juice and the urine from an alkaline fluid.

The reaction of the blood is measured by the quantity of sodium

hydroxide which will be neutralized by 100 cubic centimeters of the blood-serum. The average amount may be stated at 0.300 gramme NaOH for 100 cubic centimeters of the blood-serum (Strauss[1]).

We will not enter here into a description of the methods used by various investigators, but will call attention to the difference in results obtained by those who examine the colored blood when first drawn and those who break up the corpuscles by the use of the centrifuge, and then determine the alkalinity of the clear serum. Blood treated in the latter manner is said to be laked. The earlier observers determining the alkalinity of the blood when first drawn found a comparatively low average. Thus the following figures may be cited: Lepine,[2] 0.203; Conrad,[3] 0.276; Krauss,[4] 0.226; Rumpff,[5] 0.182 to 0.218; Von Limbeck,[6] 0.218; Von Jaksch,[7] 0.250 to 0.300. By using laked blood Bernard[8] found 0.450; Löwy,[9] 0.497; Strauss, 0.300 to 0.350.

Strauss concludes that a variation of 0.075 is within normal limits.

The earlier observers found a marked reduction of alkalinity on standing, but the later observers have not found this to be the case. Berend found that the alkaline reaction is likely to return after the blood has stood some time, because the alkali present in the corpuscles is only slowly given up by them. There is also reason to believe that the acid used in titration may break up certain organic compounds present in the blood, separating and combining with the alkali. Thus a portion of the alkali estimated may proceed from compounds which would not properly be reckoned as alkaline in their action in the system.

Whether we should understand by the degree of alkalinity the amount of acid that can be neutralized by the serum without the corpuscles, or whether the latter should be included, seems to be an important question. As far as clinical relations are concerned, we cannot suppose that the alkali present in the corpuscles is capable of exerting the influence which we are inclined to attribute to the alkali of the blood. The corpuscles do not pass outside the blood-vessels, and their alkaline reaction can have little influence upon the tissues. It seems, therefore, that the factor of the alkalinity due to the composition of the corpuscles should be excluded from consideration and looked upon merely as potential alkalinity. If we make this reservation, we may perhaps accept the figure given by Schafer[10] as expressing the average alkalinity of human blood, viz., 0.200. Observations upon other animals have given about the same figures, and have shown that the blood of carnivora is slightly more

alkaline than that of herbivora. Lassar[11] found in French rabbits 0.212; in cats, 0.241.

Some authors make a distinction between the diffusible alkali found in the serum and the non-diffusible present in the corpuscles. The capacity for bases is greater in the serum, and that for acids in the corpuscles (Spiro).

According to the investigations of Strauss, there are no marked variations in the same individual either owing to the time of day or from day to day. Digestion seems to have no particular influence. Other observers, using older methods, have found different results. Jeffries[12] found a rise from morning to dinner-time, and after dinner a fall. Dronin,[13] Conrad, Baldi, Sticker, and Hubner hold that the alkalinity of the blood is increased at the height of digestion. Schafer states that it rises during digestion. It is diminished during muscular work upon a diet deficient in proteids, but when the diet is rich in proteids the influence of work is not manifest.

Burchhardt and Minkowski[14] found in rabbits after tetanizing, as by strychnine poisoning, a marked reduction of the CO_2 of the blood. Cohnstein[15] confirmed this for rabbits, but he found in dogs a regulating mechanism that prevented an excessive reduction of blood alkalinity. By the administration of food containing little nitrogen he found that the alkalinity of the dog's blood could be reduced by muscular work to a certain degree, but the organism of the dog was able to resist the further influence of work and maintain its blood at this minimum of alkalinity. Cohnstein found, what Dronin had previously noticed, that in these cases the alkalinity of the serum of the blood was greatly lowered, while the reaction of the whole blood remained about the same as in a state of rest.

The cause of blood-alkalinity is twofold: inorganic alkalies and organic alkaline substances derived from proteids. The inorganic alkalies are the carbonates and bicarbonates of potassium and sodium, and the di-sodium-hydrogen phosphate. The bicarbonates and the phosphates, while alkaline to litmus, are neutral to other indicators, such as phenol-phthallein. The bicarbonate loses much of its carbon dioxide in passing through the lungs, and thus undergoes a partial conversion into carbonate. As a result of this change arterial blood is more alkaline than venous blood. That part of the alkalinity of the blood is due to the presence of an organic substance of alkaline reaction is shown by the fact that in some instances the alkalinity is higher than can be accounted for by the total quantity of bases found in the ash. A portion of these bases is undoubtedly present in the blood in the form of neutral salts, so that a considerable por-

tion of the alkalinity must be due to organic substances. That these substances are derived from the proteids is probable, from the fact that the organic alkalies are nitrogenous in character and must be derived from the nitrogenous food. It is further shown by the fact that a diet rich in proteids prevents the diminution of the alkalinity of the blood by excessive muscular exertion. What these substances are is at present unknown.

This organic alkali appears to be largely contained in the corpuscles. By saturating the blood with carbon dioxide, this alkali can be withdrawn from the corpuscles, so that they become less alkaline, while the serum becomes more alkaline. Probably other influences can change the relation of the corpuscles and serum.

The alkaline reaction of human blood is maintained in spite of the constant entrance into the blood of acids, either taken as food or generated by fermentation in the intestines, or produced as the result of the metabolism in the various tissues.

Acids, or substances acid in reaction, form a large part of the diet of the human race. In addition to this, we have a frequent source of acid in the fermentations that occur during the digestion of starchy and saccharine food. Acids are also constantly formed by the oxidation of food, more particularly the carbohydrates. The action of the muscles produces carbonic and lactic acids. All these acids entering the blood tend to reduce its alkalinity, and if this tendency were not counteracted, the reaction of the blood would soon become neutral or even acid. The mechanism by which the reaction of blood is regulated and its alkalinity maintained is of the greatest interest and practical importance to the physician.

Three tissues assist in the removal of acid from the blood, viz., the skin, the lungs, and the kidneys. Of these, the kidneys are by far the most important as a regulating mechanism.

The reaction of the perspiration is constantly acid, and by it a considerable amount of acid is removed from the blood. The lungs also give off carbon dioxide, which is produced by the oxidation of substances having a more pronounced acid reaction, and therefore respiration serves to remove a certain amount of acid from the blood. The kidneys, however, constitute the most sensitive part of the mechanism for regulating the reaction of the blood. The reaction of the urine responds rapidly to the influence of acid either ingested or formed within the organism. The ingestion of acid is followed in a short time by the secretion of a more acid urine, while the ingestion of alkali is followed in from half an hour to two hours by the excretion of less acid or alkaline urine.

This compensation is mainly secured by the excretion of acid sodium phosphate, which is produced by a reaction between sodium bicarbonate and di-sodium-hydrogen phosphate, which results in the passage of the acid phosphate into the urine and the retention of the more alkaline sodium carbonate in the blood. This reaction results in the removal of both sodium and phosphoric acid from the system, and, unless a source of supply is provided, may lead to serious impoverishment of the blood.

That the administration of acids leads to the removal of alkali from the system has been shown by Salkowski.[16] This is marked in the herbivora, but occurs to a less extent in the carnivora, and is largely due to the fact that herbivora find in their food an abundant source of alkaline salts.

Acids entering the system may also be neutralized by ammonia derived from the proteid food and excreted as ammonium salts. This method of regulation comes into use more particularly in pathologic conditions, as in fevers, and is more efficient in the carnivora than in herbivora.

Herbivorous animals show a greater variability in the degree of alkalinity of the blood than carnivorous. This is due to the fact that the carnivora are able to guard against the effect of the introduction of acids by combining them with ammonia, which they derive from the metabolism of proteids. The herbivora are unable to do this as perfectly as the carnivora, and consequently when inorganic acids are administered to them the alkalinity of their blood diminishes and they succumb readily to acid poisoning.

F. A. Fodera and M. Ragona[17] found that feeding rabbits on bran, which produced an acid urine, reduced the alkalinity of the blood. Prolonged hunger produced a slight reduction in dogs. In rabbits the administration of acids either per os or subcutaneously reduced the alkalinity, while alkalies increased it. In dogs, however, under the same treatment, the reaction remained constant. In asphyxia, quickly induced, there was no change, but when slowly produced the alkalinity of the blood increased.

Krauss claimed that the destruction of the red blood cells decreased alkalinity, but Fodera and Ragona found that in rabbits pyrogallol produced a slight reduction; in dogs none of the agents used (glycerin, ether, pyrogallol) produced any change. No relation was found between destruction of red blood-corpuscles and the reaction of the blood.

It has been claimed that the herbivora are destitute of the power to combine acids with ammonia, but Dr. H. Winterburg,[18] as the

result of recent investigation, comes to the conclusion that herbivora as well as carnivora possess ammonia, which neutralizes acids. There is a quantitative difference in favor of the carnivora, but in principle the chemical organization of both classes is the same. The herbivora stand in the position of the carnivora receiving large doses of vegetable salts. Their minimal excretion of ammonia corresponds to the remains of ammoniacal salts not converted into urea. In this respect man resembles the carnivora.

Strauss suggests that the liver is the organ which is active in securing this neutralization of acids, and also effects the storing of alkalies when they are given to an undue extent. This is in accordance with what we know of the formation of urea (from which ammonia may easily be derived), and is borne out by the effect of diseases of the liver on the alkalinity of the blood.

The pathological relations of the alkalinity of the blood are of very great importance, and have been the subject of much investigation. Here we find marked differences between the results of earlier observers using the blood freshly drawn and those obtained by later observers using laked blood.

Conrad (1878) found the alkalinity of the blood lessened in chronic rheumatism, in diabetes, and in anemia. Cantani (1884) found blood in the last stages of cholera greatly reduced in alkalinity, and in some cases even acid. Von Jaksch (1887) found in fevers a constant reduction of alkalinity; in nervous diseases and in diseases of the heart and blood-vessels without fever, he found the alkalinity generally increased; in kidney diseases without uremia there was no especial change; in uremia there was a very marked reduction; in cancer and diseases of the liver, in which there was destruction of the liver tissue, the reduction was marked; in chronic rheumatism he found no diminution of alkalinity.

Krauss (1890) examined the blood with reference to its capacity for carbon dioxide, and found that without reference to the various characters of the infection a notable diminution of the capacity for carbon dioxide of the venous blood occurs in men affected with fever. This occurs with varying rapidity after the infection, and is parallel to the height of the fever; the capacity for carbon dioxide returns to normal soon after defervescence. Antipyretic agents do not immediately cause this restoration to normal. The diminution in the capacity for carbon dioxide is an expression of the diminution in the alkalinity of the blood. This was found diminished by direct titration.

On the other hand, Strauss (1896) found in fevers either no

change or an increase in alkalinity; in no case was there a marked reduction. In new growths, in blood diseases, and in diabetes, the same result was obtained. Similar conclusions have been reached by Berend, Von Limbeck, and others.

The contradiction between these results and those of the older observers is very striking, and suggests that by laking the blood a factor is introduced which has no influence on the course of disease, and which therefore should be disregarded in considering the pathological relations of blood alkalinity.

Whether we regard the effects of the blood upon bacteria or upon the toxins, we must attribute those effects to substances dissolved in the blood-serum, and not to matters embedded in the corpuscles. It would seem, therefore, that a method of estimating alkalinity that gives the best estimate of the alkalinity of the serum as it circulates in the vessels would give us the best idea of the efficient alkalinity of the blood. We may admit that the later researches excel in scientific accuracy, but we must believe that the former observations were expressions of facts which ought not to be disregarded.

In 1889 Peiper[19] read an article in which he stated that he found alkalinity greater in adults than in children, in men than in women, and found great reduction in diabetes, in uremia, in leucemia, and generally in fevers. In the discussion of this paper, Loeffler[20] stated that rats were rendered more resistant to anthrax by a meat diet, and cited an experiment to illustrate this fact. He took two sets of rats, of equal weight, and fed one set on meat and the other on bread and water. When they had become thoroughly accustomed to their diet, the rats were infected with anthrax. Six out of the eight that were fed on bread died, but of those fed on meat one only out of eight succumbed to the disease. Loeffler raised the question whether the meat diet increased the alkalinity of the blood and rendered the animals more resistant to disease.

Von Fodor,[21] in an investigation of the bactericidal power of the blood-serum, demonstrated that arterial blood has greater germicidal power than the venous blood; that fresh blood is more effective than after standing. The bactericidal power was less in an atmosphere of oxygen or of carbon dioxide.

Blood of animals poisoned by carbon monoxide lost its power to kill bacteria; the bactericidal power was found to be greatest at a temperature of 38° to 40° C. These results evidently pointed to a connection between the alkaline reaction of the blood and its bactericidal power. This was confirmed by experiments, in which

it was shown that addition of alkalies increased this action of the blood-serum. Sodium and potassium carbonates have a marked effect; sodium bicarbonate and sodium phosphate considerably, and ammonium carbonate slightly, increase the power of the blood to destroy or inhibit the action of bacteria.

Experiments upon rabbits showed that the animals which received an injection of cultures of anthrax bacilli without treatment died soon after the injection, while those which received injections of sodium carbonate in addition to the cultures either recovered or succumbed to the disease much later than the untreated ones, and some of them showed no bacilli in the blood or tissues.

Behring and Schor[22] repeated Fodor's experiments, but without favorable results. Fodor[23] admits that he has not always obtained such favorable results. He found that on administering sodium bicarbonate to rabbits the alkalinity increased, and the increase lasted from twenty-four to forty-eight hours.

The alkalinity of the blood in rabbits rises after infection with anthrax, and then falls in proportion to the virulence of the infection. Rabbits whose blood is more alkaline resist infection better than those whose blood is less alkaline. Similar results were obtained with cholera bacilli, typhoid, tuberculosis, and erysipelas.

M. Calabrese,[24] of Naples, confirmed the results of Von Fodor, and in 1895 gave the following account of his observations: "I have immunized animals either with attenuated cultures or virulent cultures, or with bacteria or vegetable toxins, and have determined the alkalinity of the blood by a very exact quantitative method. I have always found that the alkalinity increases in proportion to the degree of immunization and reaches its maximum when the animal has become completely refractory. The immunized animal reacts against infection by a moderate but persistent increase in alkalinity of the blood, while normal animals show at first an increase of alkalinity more or less intense, followed by diminution in the alkalinity in the hours preceding death."

A. Cantani[25] (1896) concludes, as the result of his experiments with diphtheria antitoxin, as follows: "Animals treated with diphtheria antitoxin show an increase in the alkalinity of the blood. This increase (in rabbits) occurs not earlier than two hours after the injection, reaches its height in from ten to twenty hours, and then slowly falls, reaching the normal after three days."

The increase of alkalinity is also noticed in animals which have been treated with antitoxin and afterwards received a fatal dose of

toxin, while in those which have not been immunized the alkalinity of the blood is reduced.

Von Fodor and Rigler[26] in 1897 published further researches showing the effects of vaccines and antitoxins upon the alkalinity of the blood. They experimented with a vaccine against anthrax, with antirabic vaccine, with diphtheria antitoxin, and with antitubercular serum. The alkalinity increases after injection with the vaccine against anthrax, but the increase is only to a certain extent parallel with the amount of vaccine used. With a very large amount the alkalinity diminishes again. The alkalinity is due to some vital action of the system, and not to the injected vaccine. Rabbits injected with rabies died, and the alkalinity fell steadily until death. Rabbits which were injected with the protective vaccine and then with the virus of rabies died after twelve days with slight diminution of the alkalinity. Injections of diphtheria toxin lower alkalinity, injections of antitoxin raise it, as in the case of vaccines; but in the case of vaccines the increase is permanent, while in the case of antitoxin it is only temporary. When injected at the same time as toxin, the antitoxin prevents the decrease of alkalinity by the toxin, and the power of resistance of the animal runs parallel to the increase in alkalinity. Animals previously treated with diphtheria antitoxin and then with diphtheria toxin die with lowered blood-alkalinity, as if no antitoxin had been given, in marked contrast to their behavior when vaccinated against anthrax.

The cause of these variations in alkalinity seems to lie in an organic substance contained in the coagulable portion of the blood-serum. The increase in alkalinity in immunization or in treatment with antitoxin is brought about by an organic substance which increases as the result of immunization or treatment with antitoxin, and decreases as the result of infection or the injection of toxin.

Löwy and Richter[27] experimented upon rabbits with injections of spermin, peptone, hemialbumose, and diphtheria antitoxin. These experiments showed usually after the injection a rise of alkalinity with diminution in the number of leucocytes, followed by an increase in the number of leucocytes and a return of the alkalinity to its normal grade. Pilocarpine gave exceptional results, in that the number of leucocytes was first decreased and then increased without any marked change in the alkalinity. By refrigeration the number of leucocytes was diminished, and the alkalinity of the blood at the same time reduced. When the same injections were made in dogs, no change in blood-alkalinity was noticed, although an increase in the number of leucocytes followed.

Caro,[28] in an investigation upon leucocytosis, concludes that after injections of spermin, tuberculin, and pilocarpine there occur slight and temporary changes in the alkalinity of the blood, usually an increase of short duration and a subsequent decrease. These variations are so temporary and so uncertain that they cannot be regarded as of any therapeutic significance. He finds that a constant relation between the alkalinity of the blood and the number of white blood cells which Löwy and Richter found for rabbits does not exist in man.

Neumann found that the power of animals to resist infection was lessened by the artificial lowering of the alkalinity of the blood. The substances which raise the alkalinity of the blood increase the power of animals to resist pneumonia and other infections. This is especially the case with spermin.

Thomas[32] finds the alkalinity of the blood reduced in acute alcoholism and in chloroform narcosis, but finds no change in chronic alcoholism, nor in poisoning by chloral, morphine, or ether.

Strasser[33] found that cold baths increased the alkalinity of the blood.

The methods of determining the alkalinity of the blood depend upon direct titration or upon some indirect determination, such as the estimation of the capacity of the blood for carbon dioxide. This method has been much used in experimental work, but it has been shown by Lehmann[29] that its results do not agree precisely with those of titration. By the formation of bicarbonates it is apt to show too high a degree of alkalinity in the blood-serum, while it does not affect substances in the corpuscles that are decomposed by other acids, and hence gives a lower degree of alkalinity for the corpuscles than the titration methods.

The titration method of Landois, which has been used in some of its modifications by most of the earlier observers, consisted in mixing the blood as soon as drawn with a solution containing sodium sulphate to prevent coagulation. To the solution of sodium sulphate was added tartaric acid in varying proportion, until a mixture was found that with the blood gave a red color with very delicate litmus paper.

Löwy's method consists in dissolving the corpuscles by some means, as by the use of glycerin, or breaking them up with the centrifuge, and determining the alkalinity of the clear serum.

Berend has introduced a method by which the corpuscles are separated from the serum, the alkalinity of the serum determined, and a separate estimation of the alkalinity of the corpuscles made.

He adds excess of acid and then titrates back with dilute standard alkali, using litmus as an indicator.

There is no doubt that these methods are open to objection, for several reasons. The choice of indicator is of great importance. Litmus is affected by carbon dioxide, and hence the neutral point is reached too soon, unless the gas is allowed to escape or is expelled by heat. The use of lacmoid gives better results, because it is not affected by carbon dioxide. Titrations are not capable of comparison, unless the same indicator be used.

Excess of acid leads to fallacies, because acids seem capable of separating alkali from neutral substances in the blood and combining with it. Moreover, Spiro and Pemsel[30] have shown that when excess of acid is used some of the acid is precipitated along with albumin, and thus too high a degree of alkalinity is obtained. The best results were obtained by these investigators by mixing the blood with water saturated with ether and precipitating with a saturated solution of ammonium sulphate. The clear filtrate was then titrated directly, using lacmoid as indicator. A similar method has been used by Kraus.

Salkowski has proposed a new method, as follows: Twenty grammes of neutral ammonium sulphate is rubbed fine and introduced with the aid of twenty cubic centimeters of water into the glass bulb of Schlössing's apparatus. A measured quantity of blood, 10 to 25 cubic centimeters, is then added, and in the acid bulb of the apparatus 10 cubic centimeters of decinormal acid is put. The apparatus is allowed to stand five or six days, until the alkalies of the blood have expelled their equivalent of ammonia from the ammonium sulphate. The acid in the bulb is then titrated with decinormal alkali. Treated in this way pig's blood gave an alkalinity of 0.252 NaOH. Rabbit's blood gave 0.214.

These methods of direct titration of the blood are so difficult of execution that they cannot be expected to come into practical use by the physician.

The determination of the acidity of the urine may afford valuable indications, although too much reliance must not be placed upon it. The kidney, by separating acid, restores the proper degree of alkalinity of the blood. A very acid urine does not necessarily mean a diminished alkalinity of the blood, but indicates an unusual introduction of acid from some source. The acidity of the urine becomes, therefore, a measure of the effort which the system is making to prevent reduction of the alkalinity of the blood, rather than an indication of the success of that effort.

The presence of ammonium salts in the urine is another indication of the struggle going on in the system to prevent the reduction of alkalinity and preserve the inorganic alkalies of the system.

The influence of alkalies in promoting oxidation renders plausible the theory that reduced alkalinity is a factor in the causation of diseases that are characterized by diminished oxidation and reduced vitality of the tissues. These diseases show various phases of faulty metabolism. Among such diseases may be mentioned gout, chronic rheumatism, diabetes. In diabetes, for instance, the tissues seem unable to use the food material presented to them in consequence of an imperfect power of oxidation, and so sugar, urea, etc., are excreted unoxidized, while the tissues suffer for want of nutriment. It is very probable that the deficient alkalinity of the blood contributes to this abnormal phenomenon.

Kraus states that if to a healthy man ten to twenty grammes of sodium carbonate is given, his urine becomes alkaline after from one-half hour to an hour, but if to a diabetic patient as much as 100 grammes of the same salts is given, the urine will remain acid.

Some authors[17] attribute diabetic coma not to acetone, diacetic acid, or oxybutyric acid, but to the diminished alkalinity of the blood.

It may be remarked that even though the blood maintains a due degree of alkaline reaction, the intercellular fluids of the tissues may have a much lower degree of alkalinity, and so contribute to a greater extent to the production of morbid phenomena.

The following conclusions may, I think, be sustained by our present knowledge:

The reaction of human blood is constantly alkaline.

The alkaline reaction is due partly to inorganic alkalies and partly to substances of organic nature which are probably derived from the proteid food.

The regulation of the reaction of the blood is due to the action of the kidneys, and probably of the liver.

The alkaline reaction of the blood is reduced in various diseases —uremia, diabetes. In infections it is lowered in proportion to the virulence of the infection, but increases with the recovery of the organism, and in immune animals is above the normal.

In the treatment of disease causes of acid reaction should be avoided, particularly in infections. Thus the action of the skin and kidneys should be favored, and the production of acids by fermentation in the intestinal canal should be prevented.

The administration of alkalies in moderation is useful, but can-

not be expected to raise the alkalinity of the blood to a high degree. This is due to the fact that inorganic alkalies are either temporarily stored in the liver or rapidly excreted by the kidneys.

The increase of alkalinity in cases of recovery from infections is probably not the cause of recovery, but is due to the production in the blood of a curative substance which is alkaline in reaction. This substance is a nitrogenous organic compound, and is derived from the proteids. A meat diet, therefore, would seem especially suited to patients suffering from infection. It may be the case that the nitrogenous constituents of beef tea, although not proteids, are capable of furnishing the material from which such an alkaline protective agent can be produced.

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982 WEST ADAMS STREET.

CYSTITIS FAVEOLATA.

BY F. KREISSL, M.D., CHICAGO,
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Among the various forms in which cystitis manifests itself, I meet quite frequently with one conspicuous by the persistence and stubbornness of its symptoms, causing the patient much suffering and the physician not a little embarrassment. This is a form of cystitis for which, to my recollection, no special term can be found in the literature, perhaps because it does not usually exist as a disease *sui generis*, being complicated by, or associated with, other morbid conditions of the urinary tract. I call the disease "cellular cystitis," or "cystitis faveolata," from the honeycomb-like appearance of the bladder wall seen through the cystoscope. It begins in all probability as a superficial cystitis, gradually involving the muscular coat to an appreciable extent, and eventually, after having continued for some time, extending to the interstitial connective tissue; finally, the inflammation may penetrate through the entire thickness of the bladder wall, resulting in pericystitis. In the course of such an interstitial cystitis, which is either a localized or general one, the muscular trabeculæ may be destroyed by suppuration. In old persons whose tissues possess little recuperative power—in particular, those suffering from urinary obstruction—the healing process is not only retarded, but also irregular. In cases in which the inflammation is not so extensive as to result in destruction and contraction, the weak muscular coat will give way under the repeated pressure caused by the tenesmus, and the formation of a number of recesses between the muscle fibers will be the inevitable consequence. In these cells devoid of contractile elements the urine stagnates, depositing a thick material consisting of pus, epithelium, triple phosphates, and bacteria. This material, adhering to the walls of the excavation, renders the urine ammoniacal by fermentation, and furnishes incessantly new material to keep up the severe cystitis.

The disease is not uncommonly associated with prostatic enlargement and strictures, especially in the posterior urethra, but I have seen it also in middle-aged and old men without these complications, and in cases where constitutional diseases favored its origin during a cystitis; although for obvious reasons its subjective and objective symptoms are much more pronounced in the former. These symptoms are frequent urination, increased when the patient stands, and aggravated by exercise or jolting; paroxysms of pain during and

a long time after micturition, and ammoniacal urine. At the end of micturition a sticky gray mass is discharged, similar to that seen in cases of chronic follicular prostatitis. In spite of the frequency in passing water, a good deal of residual urine, even in cases free from obstruction, can be drawn by catheter.

The cystoscope shows the honeycomb excavations, which are not to be confounded with real diverticula of the bladder. The latter are formed by the entire thickness of the wall, while the former are to be regarded as herniæ of the mucous membrane. The entrance to the diverticula, being smaller than the cavity, appears in the cystoscope as a black aperture, while the excavations in cystitis faveolata, offering a broad entrance to the rays of the lamp, can be seen to the bottom.

The clinical and subjective symptoms here given are common in cystitis, and are of various origin, and the general practitioner does not always possess the facilities offered by the cystoscope. Nevertheless, there are certain points taken together with the above symptoms which permit an approximately correct diagnosis. Excluding superficial cystitis by a thorough general and urinary examination, and stone in the bladder by the use of a stone searcher, the presence of residual urine in many cases, and the possibility of filling the bladder with a considerable amount of fluid, help to eliminate cystitis dolorosa, contracture of the bladder, and pericystitis. In every case of cystitis uncomplicated by the existence of these cells, washing of the bladder with a few ounces of a normal salt solution will soon result in the injected fluid coming back clear from the viscus, while in the disease in question it takes quarts of the solution to remove, and then only partially, the sticky mass from the many recesses. The fluid never returns perfectly clear and free from the pus flakes. This latter fact explains the tenacity of the disease and the persistence of the extremely painful symptoms. It also shows that injections with mild antiseptic solutions and the fountain syringe are ineffective in the management of this particular form of cystitis. It is to be regretted that the etiology does not leave much hope for a complete restoration, but these cases are not beyond help or the possibility of temporary relief. The main principles in the management of these cases are: First, effective disinfection of the whole viscus, and especially of the cells; secondly, continuous drainage of the bladder, at least for a while; thirdly, general hygienic and dietetic measures.

The disinfection of the urine and the bladder *cavum* is accomplished by internal medication and local applications. As the disease

is usually associated with more or less deranged kidneys, we are compelled to discard antiseptics exercising an unfavorable influence upon their function — for instance, salol, naphthol, sandalwood oil, carbolic acid, etc. Boracic acid or benzoic acid in four-grain doses every six hours will give much satisfaction. The recently much advocated urotropin in doses of from five to eight grains every six hours can only be used for a short time. It is true it frees the urine considerably from bacteria, but after an observation of nearly two years I have come to the conclusion that, when given for a longer period, it causes much irritation at the vesical neck, and the cases in question require extended treatment.

Small quantities of warm non-irritating fluids injected by a glass hand syringe are useful in clearing the bladder of pus. In this way it is more quickly and thoroughly cleaned than by large quantities thrown into the viscus by means of a fountain bag, which has repeatedly caused rupture of the already thinned bottom of the recesses. Eight ounces of a warm normal salt solution injected successively in quantities of one ounce at a time removes a great deal of the pus, to be followed by one ounce of a plumb. acet. solution (plumb. ac. bas. ½ grain to the ounce of distilled water) and left in the bladder. This acts as a protracted disinfectant, prevents pain caused by the collapse of the often ulcerated and sensitive bladder walls, and hemorrhages *in vacuo* very likely to occur in this peculiar form of cystitis. Irrigations with methylene blue solutions, 1 : 2000, are highly recommended abroad. The deodorizing and disinfecting power of this substance is great, and the female bladder seems to tolerate it even in higher concentrations, but I have discarded it in affections of the male bladder, having invariably found its application followed by extremely painful paroxysms lasting hours and days.

A suspension of chinosol, one-tenth of a grain to the ounce of distilled water, is non-irritating, a strong antiseptic and deodorant, and non-toxic. It is the best remedy for this condition. Under this treatment the condition of the urine improves rapidly, the irritation subsides, the intervals become longer. At this stage we begin with Guyon's instillations of nitrate of silver, in the previously cleaned and emptied bladder — a very effective procedure, and not very painful, provided the patient is given a morphine or cocaine suppository fifteen minutes before the instillation; which should not be repeated oftener than once a week.

In cases in which the introduction of a catheter is very difficult and irritating, or in cases not responding to the injections in a few

days, temporary or even permanent drainage of the bladder and injections of the solution mentioned above are indicated. Temporary drainage of the bladder is best obtained by suprapubic puncture, or by a soft-rubber catheter, No. 8 English, inserted in the urethra, and secured by a silk thread and a piece of adhesive plaster in the usual way. The catheter should be introduced just deep enough to place its eye past the internal sphincter, to avoid as much as possible contact of the sensitive bladder wall with a foreign body.

Still better are rubber tubes with a large central opening at the proximal end, guarded with an obturator. The distal end is connected with a piece of rubber tubing, dipping into a corrosive sublimate solution, 1:2000, in a bag attached to the leg of the patient, or in a vessel at the bedside. I prefer corrosive sublimate to the frequently favored carbolic acid solution, which sometimes decomposes and causes corrosion and burns of the skin. This kind of drainage is a great advantage because it allows the usually old patients to be up and around, avoiding the risk of hypostatic pneumonia, decubitus, etc. It has its drawbacks, also. The permanent pressure of a foreign body in the urethra, like every endourethral interference, is not without evil consequences for the kidneys of men in advanced age, with sclerotic changes; quite often we are informed of the approaching danger by the tongue becoming dry and the secretion of urine scanty. Immediate removal of the catheter and diuretics change the situation in a few hours; if the warning is neglected a uremic attack with fatal result is inevitable. For these cases suprapubic puncture, since it can be performed with Schleich's local anesthesia, is preferable.

In general, we give all the well known instructions as to diet and hygiene. In maintaining these principles much suffering can be relieved, and comparative comfort and freedom from pain will be given to those unfortunate patients for whose ailments a permanent and radical cure cannot be promised.

1006 STEWART BUILDING.

ACUTE ANTERIOR POLIOMYELITIS.[1]

BY ELBERT WING, M.D.,

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The ultimate objects of the practice of medicine are the cure and the prevention of disease. The usefulness of a physician in his cure of disease depends upon his conduct of the case. The conduct of the case is intelligent in proportion as it is based upon an accurate knowledge of the pathology which underlies it.

Charcot taught that acute anterior poliomyelitis is primarily a parenchymatous inflammation of the ganglion cells of the anterior horns of gray matter in the spinal cord. Much evidence has accumulated since Charcot's teaching was new, to show that this disease is an inflammatory process of vascular origin, and probably of an infectious nature. The object of this paper is to present a brief review of this evidence, which may be classified as anatomical, pathological, and clinical.

I. *Anatomical.*—Obersteiner (The Central Nervous System) and E. A. Schaefer (Quain's Anatomy) base their discussion of the vascular supply of the spinal cord upon the work of Adamkiewicz and Kadyi. These are the sources of the anatomical data of this paper.

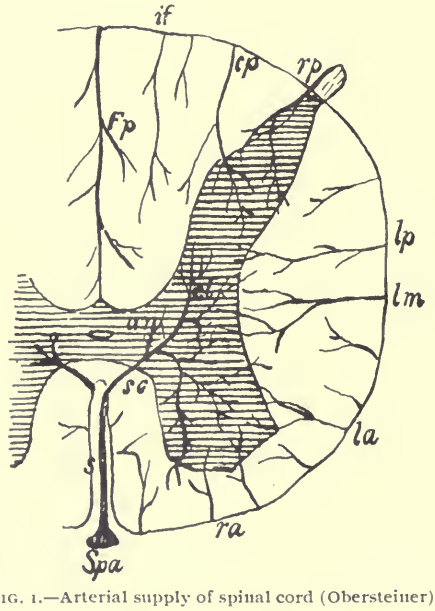


FIG. 1.—Arterial supply of spinal cord (Obersteiner).

[1] Read before the Illinois State Medical Society, May 17, 1899.

The anterior and posterior spinal arteries supply the cord with blood. They are formed by the branches from the vertebrals, together with affluents which join them lower down. The branches of the vertebral arteries which form the anterior spinal artery (Fig. 1, *Spa*) unite as a rule at the level of the fourth to the sixth spinal nerves. Occasionally the union is lower down, and "they separate and reunite repeatedly." Of these affluents one, which is relatively very large, is found between the eighth dorsal and third lumbar vertebræ on either side, and has been called by Adamkiewicz "arteria spinalis magna." The posterior spinal arteries, also derived from the vertebrals, remain separate but have frequent anastomotic branches. The arteries of the sulcus (Fig. 1, *s*) leave the anterior spinal artery very irregularly and at right angles. They rarely divide except after entering the gray matter. The division is into two branches. One of these (Fig. 1, *an*), through anastomotic branches, goes to form an artery which runs, cephalo-caudad, throughout the cord. The other branch is distributed chiefly to the gray matter of the anterior horn, which it supplies very richly, and slightly to the adjacent white matter. Posterior to the level of the anterior gray commissure, the cord is supplied chiefly by the posterior spinal arteries. This supply is relatively scanty. All of these arteries, in Cohnheim's sense, are terminal arteries, but "no one set of arterioles is confined in its distribution to any one group of cells" (Schaefer).

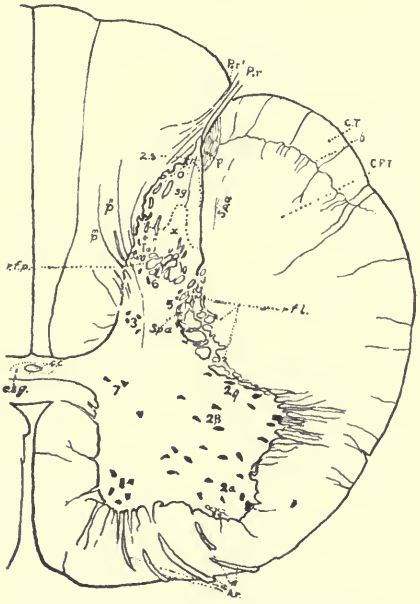


FIG. 2.—Transverse section of human spinal cord at level of sixth cervical nerve (Foster).

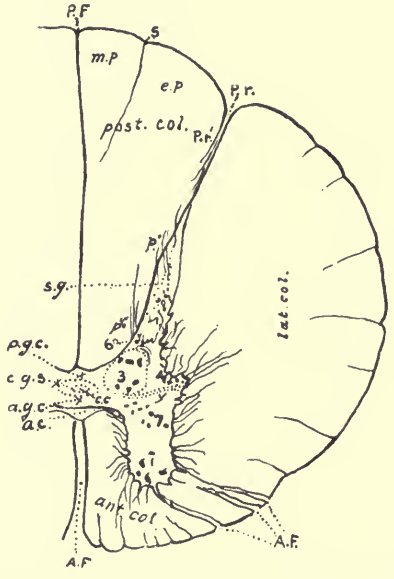


FIG. 3.—Transverse section of human spinal cord at level of sixth dorsal (Foster).

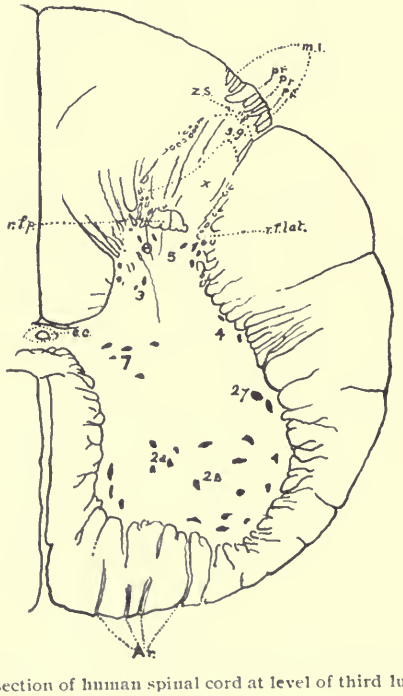


FIG. 4.—Transverse section of human spinal cord at level of third lumbar nerve (Foster).

Figs. 2, 3, and 4 are copied from drawings in Foster's Physiology. The original drawings were made by Sherrington, carefully drawn to scale from actual sections of the cord. These drawings are from sections of the sixth cervical, sixth dorsal, and third lumbar segments. They show the relative amounts of gray and white matter in cross-section, and also the arrangement and grouping of the ganglion cells.

The anatomical evidence presented in this paper shows the following facts:

1. The vascular supply to the spinal cord is most abundant in the lumbar region.

2. It is relatively much more abundant in the anterior horns of gray matter than it is in the white substance.

3. While "no one set of the terminal arterioles is confined in its distribution to any one group of ganglion cells," it is improbable that any one set of these vessels is distributed to many groups of the cells.

4. The number of ganglion cells is very great in the cervical and lumbar swellings, and relatively small in the other segments of the cord.

Kaiser's estimate, quoted by Joseph Collins in the *New York Medical Journal* of January 13, 1894, page 41, is that the absolute number of ganglion cells in the segments mentioned is as follows:

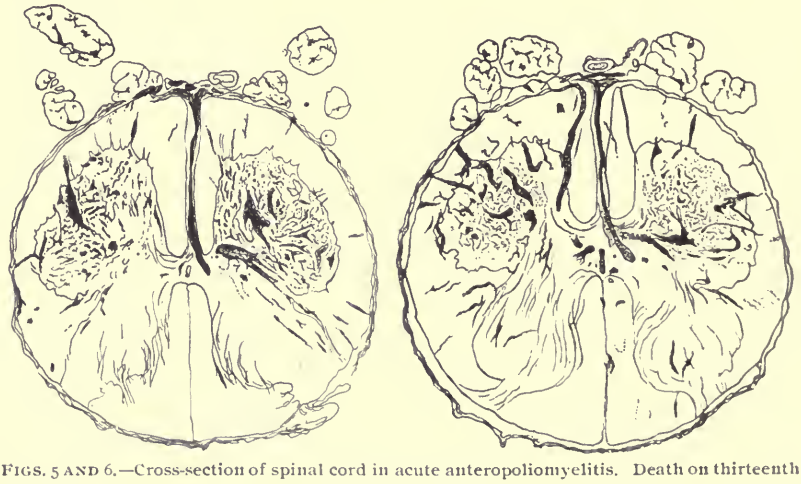
Fourth cervical segment	28440
Fifth cervical segment	64230
Sixth cervical segment	44560
Seventh cervical segment	36850
Eighth cervical segment	47970
First dorsal segment	27600
Total number which supply the nerves of the brachial plexus	249650

5. In an inflammatory process of vascular origin, limited to the spinal cord, it is further evident that: (*a*) because of their histological characters and physiological functions, as well as the arrangement of their blood-supply, the ganglion cells will suffer most; (*b*) because of the peculiarity of the arterial supply some groups may suffer complete destruction, while others may suffer but little; and between these extremes all degrees of destruction will occur.

6. The relatively larger number of ganglion cells in the parts of the cord from which the nerves of the extremities arise, and the small number of such cells in other parts, is an ample explanation of the clinical distribution of the motor paralysis in cases of the disease.

II. *Pathological.* — The pathological evidence consists in the results of investigation of the spinal cord in (1) old cases, (2) recent cases, (3) cases of other but analogous or similar diseases, (4) experimental pathology.

The investigations of the cord in old cases show only the histological results of the process, and throw little light upon its nature. In addition to the long and well known destruction of ganglion cells, increase of connective tissue, and general shrinking of the affected horns of gray matter, the manifestation of greatest interest is the existence in the sclerotic areas of isolated groups of ganglion cells entirely unchanged. These are very irregularly distributed, but show clearly that they have escaped the general inflammatory process, and their distribution corresponds with the eccentric clinical distribution of the motor paralysis. If these histological conditions which characterize the old cases were the only pathological evidence, the contention of Charcot might be sustained; and, indeed, it was upon just this evidence that the teaching was based. In this argument, among the pathological conditions of the non-nervous tissues in old cases, the arrest of growth in the long bones is the only one of interest.



FIGS. 5 AND 6.—Cross-section of spinal cord in acute anteropoliomyelitis. Death on thirteenth day. (Goldscheider.)

There have not been very many opportunities for examination of the spinal cord in recent cases. Of those who have had an opportunity for such post-mortem study, Rissler (a pupil of Medin, of Stockholm) and Kahlden still hold the views of Charcot. Among those who oppose this view are Goldscheider, Siemerling, Dauber,

Pierre Marie, von Leyden, Redlich, and Fr. Schultze. Goldscheider, Siemerling, and Dauber base their opinions upon post-mortem examinations of recent cases. Goldscheider's drawings (Figs. 5 and 6) demonstrate the nature of the process in recent cases. The entire cross-section of the cord is involved; by far the greatest intensity of the process is confined to the anterior gray horns; the arteries are distended, and there is a marked perivascular extravasation of small cells—an unmistakable inflammatory process of vascular origin.

The contention of Marie and Goldscheider (*Zeitschr. für Klin. Med.*, v. 23, 1894), that the process has its starting-point in the vessels, as well as the claim that the process is in all cases primarily general inflammation of the cord, and that while the entire cross-section is attacked the anterior horns of gray matter suffer chiefly, and at times alone, finds ample confirmation in the recent cases reported by Redlich (*Wiener Klin. Wochenschr.*, April 21, 1894) and Siemerling (*Arch. für Psychiat. und Nervenkr.*, v. 26, No. 1). In these three cases the vessels were markedly affected throughout the cord, and especially in the region of the anterior spinal artery.

The evidence in confirmation which is furnished by other inflammatory processes in the spinal cord comes from the more recent studies of cases of acute ascending paralysis, or Landry's disease. The men whose investigations have placed this disease among the acute infectious inflammations of the spinal cord are Curschmann (1886), Catani, Eisenlohr (1890), Bailey and Ewing, Oettinger and Marinesco (1896), Hirtz and Lesne (1897), Mills and Spiller, and L. Krewer (1898). This progress has been due to improved technical methods. In these cases the same microorganisms have not always been found, and in most of the cases none were found in the cord itself, but the evidence of infection and the vascular origin of the inflammatory process is positive and conclusive. The investigations indicate an acute toxemia whose predilection is for the anterior horns of the cord, first with functional loss, followed by histological changes in the ganglion cells in the anterior horns and the nerves.

In the investigations in the field of experimental pathology, Nissl (*Wiener Med. Wochenschr.*, Aug. 2, 1898, quoted in *Philadelphia Medical Journal*, April 24, 1898) reports results upon cells and fibers in cases of fatal intoxication slowly produced by the action of morphine, veratrine, nicotine, and alcohol. The histological results were the same in each case.

Max Rothman (*Neurolog. Centralb.*, Jan. 1 and 15, 1899; *Philadelphia Medical Journal*, Jan. 28, 1899) reports the results in dogs of

temporary occlusion of the aorta below the mesenteric artery. The time of the occlusion varied from one hour to one hour and ten minutes.

After six hours the Nissl bodies of the cells of the anterior horns appear paler and less sharply circumscribed. In some the nucleus is central, in others it is distorted and near the periphery.

After twelve hours the Nissl bodies are no longer recognizable; the protoplasm in some cells is diffusely stained and shows a finely reticular structure; many have lost their protoplasmic processes, and some are merely colorless vesicles.

After twenty-eight hours the Nissl bodies begin to reappear, grouped chiefly around the nucleus in a finely granular layer, but the periphery usually remains unstained.

After four or five days the cells begin to recover, but some remain granular and the nucleus scarcely distinguishable.

At the end of sixteen days the majority of the cells have recovered.

Reference here should be made to the report of Lamy (Goldscheider, Nothnagel's Handbuch, p. 424), that after the injection of an indifferent powder into the abdominal aorta, arterial obstruction and consequent hemorrhagic softening occurs first in the gray matter of the cord.

Because the general pathological conditions do not in any way disclose the nature of the inflammatory process, they will be referred to in the discussion of the general theory of the disease, and only incidentally.

III. *Clinical.*—The clinical evidence, which shows the process to be an acute inflammatory one, is not discussed in this paper because it alone does not indicate whether the process is parenchymatous or interstitial. There is abundant evidence, however, to show its infectious nature.

The symptoms of the invasion are abrupt attack, fever, prostration, pain, usually rheumatoid, rapidly established motor paralysis, and, in severe cases, delirium, vomiting, and paralysis of the bladder. Excepting the motor paralysis, these are the symptoms of pneumonia, tonsillitis, streptococcus infection anywhere in the body, measles, and scarlet fever. Again, anterior poliomyelitis has frequently been epidemic. (Altman, Calverly, Colmar, Cordier, Leegard, Lyon, Medin (44 cases), Oxholm, abroad; Dana (*New York Medical Journal*, Dec. 29, 1894), Macphall (*Medical News*, Dec. 8, 1894), 160 cases; and others.)

The fact that most cases occur in young children, and that most

single cases and all epidemics have occurred between late spring and early autumn, tend strongly to support the infectious theory of the disease. The same may be said concerning the relation of the disease to dentition, injuries, and infectious diseases, since all of these conditions either reduce resistance to a point favorable for the development of microorganisms or furnish them.

The anatomical evidence submitted in this paper shows conclusively that if acute anterior poliomyelitis is an inflammatory process of vascular origin, it would attack the lumbar region of the cord most frequently, and work its greatest degree of destruction among the groups of ganglion cells of the anterior horns; that next it would attack the cervical segments most frequently. And all of these things it does. It is idle, perhaps, to even hazard a guess as to why it attacks the left side more often than the right, and some groups of cells and not others; but it is at least possible that some peculiarities in the vascular supply of the cord may yet be worked out which will explain all of these facts. The evidence in support of the claim of the probable infectious nature of the disease might be very much elaborated both in detail and in instances; but that submitted is thought to be sufficient. A similar remark may be made concerning the claim that the process tends to attack the entire cross-section of the cord. Of course, this is probably simply a matter of relative virulence of infection and power of resistance.

Nissl's discovery that the effect of various poisons upon the protoplasm of ganglion cells is the same, no matter what the function of the cells is, taken in connection with the relation of the vascular supply to the several histological structures in the cord, is a quite sufficient explanation of the limitation of the paralysis to the motor sphere. Rothmann's discovery, if confirmed, concerning the recovery of ganglion cells after partial destruction of their protoplasm, fully explains the restoration of power to muscles completely paralyzed in the early stages of an attack.

The relation of the atrophied muscles to the destroyed ganglion cells of the anterior horns is so well understood that it needs only this mention. The arrested development of the long bones tends to confirm the claim that the disease attacks the posterior as well as the anterior horns of the cord.

If the importance of the treatment of disease is not overstated in the opening sentences of this paper, a very brief mention of the indications which should guide it may be made. First, treat the initial stages as those of any acute infectious disease—quiet, antipyretics, cathartics, diuretics, anodynes, and nervous sedatives *pro re*

nata. As soon as danger of inflammatory reaction has passed, exercise the paralyzed muscles. Electricity is valuable for this purpose in cases in which the patients will submit to its use in currents sufficiently strong to be efficient. Massage is of the greatest value. It should be as thorough as the case permits. It should be continued as long as any improvement continues, or until no retrogression follows its abandonment. In some cases this is much longer than a year. Passive exercise is secured by electricity and massage. Active exercise, when possible, is the best and should be encouraged in all possible ways, stopping always short of continued fatigue. Transplantation of tendons, care in prevention and correction of deformities, as indicated. And finally, never forget Gower's admonition that after six months, so far as the cord is concerned, the lesion has become a cicatrix.

34 WASHINGTON STREET.

PROTARGOL IN GONORRHEA.

BY WILLIAM L. BAUM, M.D.,

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In the *Pharmaceutische Centralhalle* (1897, No. 37) there appeared a short article by Dr. A. Eichengrun, describing a new silver salt called protargol. It was spoken of as an organic combination of silver with a protein molecule; a fine light-yellow powder, containing eight per cent of silver and easily dissolved in twice its weight of cold water, the solution being perfectly clear. Protargol dissolves readily in blood-serum, solutions of albumin, and glycerin. Aqueous solutions of the drug are not precipitated by sodium chloride or solutions of albumin. It is more easily dissolved in fluids containing albumin, such as bouillon, than in water.

Benario, of Frankfort (*Therapeutische Beilage der Deutsche Med. Wochenschrift*, 1897, p. 82), described protargol as a new antiseptic and antigonorrheic, and devoted considerable time to the determination of the bactericidal value of the drug. His experiments show that the staphylococcus pyogenes aureus was destroyed by a one-per-cent solution in twenty minutes. He claimed that the destruction of bacteria was more rapid in solutions containing serum such as bouillon than it was in pure aqueous solution. This latter point is of considerable practical importance from a therapeutic standpoint. Anthrax cultures did not grow in the presence of two-per-cent solutions. Benario first employed it in cases of gonorrhea, beginning with a 0.3-per-cent solution, which caused no irritation; this was afterward increased to a 1.5-per-cent, which produced slight burning in the urethra. In the reports of his cases it is stated that the perceptible discharge ceased in eight days, and the gonococcus disappeared in from ten to fourteen days. He reported but one failure, which was in a case complicated by pronounced hypospadias. Protargol he regards as not only an interesting chemical body, but a most valuable remedy in the treatment of gonorrhea.

In the treatment of wounds applied locally it exercises a favorable influence upon the healing process. It is valuable in diseases of bacterial origin or those complicated by infection.

Neisser, of Breslau (*Dermatologisches Centralblatt*, October, 1897), insists upon the importance of an early cure of an acute gonorrhea; by a cure, he understands the eradication of the infection. Not only is chronic gonorrhea with its resultant tissue changes more difficult to treat, but it is the usual source of infec-

tion, as the patient is not aware of the liability of spreading the disease in this stage. An efficient treatment, as well as prophylaxis, should aim to destroy as soon as possible the infectious agent, namely, the gonococcus; delay is dangerous. Energetic, rapid measures are not only theoretically correct, but have been proven by experience to be the most certain and effective.

After a lengthy discussion of the advantages and disadvantages of Janet's irrigation method, Neisser asks, "Cannot the same result be accomplished by repeated injections of a fluid from a syringe containing from 10 to 15 cubic centimeters?" For the great mass of patients, such a method is not only more comfortable, but is always more practicable. It will not yield satisfactory results, however, unless the remedy employed does not cause changes in the mucous membrane or increase the inflammation and suppuration. It must in addition certainly destroy the gonococcus. Some of the drugs which are more or less valuable from this standpoint are the silver salts, argentic nitrate, argentamin, argonin, and itrol. Ichthyol and oxycyanide of mercury have also been employed. Neisser thinks that the new silver salt, protargol, is of more value than any of these later additions to our therapeutics.

Neisser uses protargol according to the following methods:

1. The existence of gonococci should first be determined. These are found in the anterior urethra only in acute cases, but in the more chronic they occur in the posterior urethra.

2. In all cases great care is exercised in the recent infections. Instruments are only passed to the posterior urethra, when after repeated microscopic examination gonococci are found in the flakes from the posterior urethra. In many cases where prolonged injections are used, this posterior treatment is unnecessary.

3. The injections should be made thrice daily, always after urination. In two of these injections the fluid is to be retained but five minutes in the urethra, the third for thirty minutes. If there be much secretion, the latter may be replaced by six injections of five minutes each.

4. At the end of a few days, in most cases, the last or prolonged injection alone is used. The other two injections are replaced by a 2½-per-cent suspension of bismuth, a 2½-per-cent suspension of iodoform, a 3-per-cent solution of boric acid, or a ¼-per-cent solution of sulphate of zinc.

5. The comfort of this treatment tends to overcome the patient's objections to its continuance for three or four weeks. In this is found its chief advantage, the aim not being so much rapidity as certainty of cure.

6. During the treatment constant microscopic examinations of the discharge should be made. The injections should be suspended only after numerous microscopic examinations fail to reveal the presence of the germ.

7. Begin with a one-fourth per cent solution of protargol, which is gradually increased to one-half and one per cent.

8. In chronic cases these mild solutions often give good results owing to their penetrative powers.

No. of case.	Age.	No. of attack.	Duration of discharge before treatment.	Discharge continued after treatment began.	Time in which gonococci disappeared.	Other treatment.	Complications.
1	26	1st.	5 days.	12 days.	16 days.	Sol. zinc.	None.
2	31	3d.	2 "	17 "	31 "	" "	"
3	18	1st.	3 "	15 "	29 "	" "	"
4	30	1st.	2 "	42 "	48 "	" "	Cystitis.
5	29	2d.	1 "	15 "	27 "	" "	None.
6	23	2d.	2 "	13 "	18 "	" "	"
7	42	3d.	8 "	27 "	42 "	" "	Epididymitis.
8	19	2d.	2 "	30 "	41 "	" "	None.
9	27	4th.	2 "	18 "	25 "	" "	"
10	25	2d.	1 "	45 "	50 "	" "	Stricture.
11	17	1st.	12 "	15 "	21 "	" "	None.
12	50	2d.	1 "	22 "	29 "	" "	"
13	30	3d.	1 "	19 "	27 "	" "	"
14	31	2d.	1 "	20 "	28 "	" "	"
15	21	1st.	2 "	45 "	56 "	Sol. ag. NO_3.	Prostatitis.
16	25	2d.	7 "	27 "	35 "	Sol. zinc.	None.
17	18	2d.	1 "	10 "	18 "	" "	"
18	40	2d.	2 "	18 "	27 "	" "	"
19	23	1st.	1 "	11 "	18 "	" "	"
20	29	3d.	1 "	17 "	28 "	" "	"
21	27	2d.	15 "	15 "	25 "	" "	"
22	22	1st.	1 "	10 "	12 "	" "	"
23	28	2d.	2 "	15 "	21 "	" "	"
24	30	3d.	2 "	12 "	18 "	" "	"
25	27	2d.	11 "	21 "	45 "	" "	Stricture.
26	25	1st.	2 "	12 "	17 "	" "	None.
27	23	3d.	1 "	11 "	20 "	" "	"
28	29	2d.	5 "	18 "	27 "	" "	"
29	18	1st.	3 "	15 "	21 "	" "	"
30	35	1st.	2 "	12 "	15 "	" "	"
31	27	3d.	1 "	45 "	60 "	" "	Cystitis.
32	23	2d.	2 "	18 "	25 "	" "	None.
33	24	2d.	3 "	15 "	27 "	" "	"
34	19	4th.	2 "	21 "	30 "	" "	"
35	45	1st.	1 "	8 "	12 "	" "	"
36	17	2d.	2 "	11 "	21 "	" "	"
37	25	3d.	1 "	15 "	27 "	" "	"
38	21	1st.	1 "	8 "	15 "	" "	"
39	19	1st.	2 "	19 "	21 "	" "	"
40	27	2d.	1 "	41 "	48 "	" "	Prostatitis.
41	20	2d.	5 "	35 "	40 "	" "	Epididymitis.
42	19	1st.	2 "	15 "	21 "	" "	None.
43	38	3d.	1 "	18 "	27 "	" "	"
44	18	1st.	3 "	10 "	15 "	" "	"
45	21	2d.	1 "	13 "	15 "	" "	"
46	18	1st.	2 "	11 "	15 "	" "	"
47	27	3d.	1 "	18 "	21 "	" "	"
48	31	5th.	1 "	21 "	48 "	Sounds and sol. zinc.	Stricture.
49	25	3d.	8 "	27 "	30 "	Sol. zinc.	None.
50	26	1st.	5 "	12 "	18 "	" "	"

In the above fifty cases, taken from my private and hospital practice, I have endeavored to carry out the treatment with the protargol as nearly as possible upon the line laid down by Neisser. Not many patients could or would submit to the prolonged injection of thirty minutes. In all of these there had to be substituted three to six injections of five minutes each. All of the cases included in this table were seen between July 1, 1898, and July, 1899. Many other cases were seen and treated with protargol in the same period, but only those cases are described in which the microscopic examinations were fully carried out.

It will be seen by this table that in the fifteen cases of first infection, in which no complication had occurred, the discharge disappeared before the average, a little less than thirteen days, while the gonococci were found as late as the seventeenth. In all of these fifty cases the last microscopic examination was made one week after the gonococci had disappeared, the secretions being obtained from the anterior and posterior urethra, with the aid of the endoscope. These results are on the whole not as good as those reported by Rosenthal at the meeting of the Berlin Dermatological Society on May 3, 1898 (*Archiv für Dermatologie und Syphilis*, vol. 45, p. 431, 1898), in which in a number of his sixty-eight reported cases the discharge disappeared in from three to eleven days. However, the results of the protargol treatment in my fifty cases have been better than in any similar number of cases treated by Janet's irrigation method, and were certainly attended with less complications.

The fact that the solution is not precipitated by albumin probably accounts for some of the good results obtained, and it certainly follows that the penetration into the urethral follicles and periurethral tissue must be greater. I have come to the conclusion, from this experience with the drug, that the protargol solution when used in the manner suggested by Neisser is a distinct advance in the treatment of gonorrhea.

103 STATE STREET.

FLOATING KIDNEY WITH INTERMITTENT HYDRONEPHROSIS.

BY GUSTAVE KOLISHER, M.D.,
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Intermittent hydronephrosis is a by no means infrequent complication of floating kidney. In a certain group of these cases the symptoms point quite definitely to certain pathological conditions, which furnish precise indications for treatment.

In a series of cases coming under my observation dislocation of a movable kidney was followed by the development of hydronephrosis while the kidney was in its abnormal position. From the standpoint of treatment these cases divide themselves into two groups; in one, after the kidney is placed in its normal position, there is a copious discharge of urine and the tumor disappears, the increased amount of urine voided bearing some relation to the size of the tumor. This train of symptoms was repeated as often as the kidney was displaced.

In the second group the replacement of the enlarged kidney is not followed by emptying of the distended organ, unless other manipulations are added—such as deep massage or catheterizing of the ureter as far as the renal pelvis. In both groups the amount of urine is considerably augmented, after free passage to the bladder is secured. There is little doubt that the explanation of the first group of cases is furnished by a bending or torsion of the ureter due to the dislocation of the kidney. It is probable that the same conditions may be brought about if the organ descends in such a way that the beginning of the ureter becomes the highest instead of the lowest point of the pelvis of the kidney. The regular disappearance of the accumulated fluid by simple reposition shows that such an explanation will account for the conditions observed. I have confirmed in two cases, which have been long under observation, that it is possible to keep these patients in a relatively good condition if the kidney is replaced after each attack of dilatation of the renal pelvis. A radical cure can only be accomplished by the performance of nephropexy, by which the kidney is permanently anchored in its normal position.

In the second group reposition alone is not sufficient to establish the patency of the upper ureteral passage. In these cases the renal pelvis may be unequally dilated, so that with the kidney in a normal position the ureteral entrance is not at the lowest point of the pelvis, but is found at the bottom of a sacculated diverticulum (Israel). If

associated with these deformities we have a dislocation with bending of the ureter, the additional obstruction will convert a partial into a complete retention. It is easy to understand how the valve-like folds of the superficial layers of the renal pelvis may temporarily hinder the flow of the urine, or how a renal calculus may furnish occasional periods of obstruction. If massage and pressure empties the accumulation, sacculation or unequal dilatation must be present. If, however, it is necessary to catheterize the renal pelvis, and this is followed by a free discharge of the accumulation, then one may infer that a valvular obstruction or a calculus exists.

In catheterization of the ureter we learn of obstructions along its course, which, if they exist, will prevent the discharge of the accumulation, even if the kidney is replaced in its normal position. In these cases nephropexy must be preceded by a dissection of the renal pelvis with correction of deformities and removal of calculus, if any exist. In cases of dilated pelvis, Israel's method of pyeloplicatio, or in case a valve is present the plastic operation of Tuffier and Israel, is to be followed.

In brief, the directions to be followed in cases of hydronephrosis and floating kidney are as follows: Replace the kidney and keep the patient in bed; wait twenty-four hours for the spontaneous emptying of the tumor. If this occurs, a simple anchoring of the movable kidney in its normal position is sufficient to effect a cure, and in the light of our present knowledge seems to be superior to McArthur's or Senn's operation. If after twenty-four hours no decrease in the tumor has taken place, ureteral catheterization is to be employed, accompanied by deep massage. If nephropexy is performed, it should be preceded by a nephrotomy, which should include such repair of the pelvis of the kidney as is indicated in the case; the ureteral catheter should be left in position to act as a guide during the operation.

92 STATE STREET.

HOT-AIR CAUTERIZATION IN LUPUS VULGARIS, AFTER THE METHOD OF DR. HOLLÄNDER.

BY JACOB FRANK, M.D.,

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The object in publishing this paper is to bring before the American medical profession the excellent treatment for lupus vulgaris described by Dr. Holländer, of Berlin, before the last International Medical Congress at Moscow, and published in the *Deutsche Medicinische Wochenschrift*, 1897, No. 43. At his special invitation I visited his private clinic in Berlin for several weeks and witnessed daily his treatment of the disease. The cases were in various stages, some receiving the last cauterization, in others it was applied for the first time. The results were remarkable. During fourteen years of hospital practice in Chicago I have operated on a number of cases of lupus, but the cosmetic effects, in the advanced cases, and especially those involving the face, were not gratifying either to myself or to the patient.

The treatment to be described appealed to me as being so worthy of notice, from the surprising results, that I determined to employ it at the first opportunity. I have had a few occasions to use the method, but at present am not ready to give my results, hoping to publish them in due time. The description of the cases and experiments referred to are those of Dr. Holländer.

Hot-air cauterization had its precursor in vaporization, and when Professor Sneguirew, of Moscow, published his conclusions as to the practical hemostatic power of steam, Dr. Holländer, at the suggestion of Prof. J. Israel, undertook to utilize this in the treatment of lupus, but the results of his efforts were very meager. The lupus was only superficially altered, because the precipitated water prevented a more intense effect. Aside from the too slight thermostatic power of steam, the weakness of this *encheirese* lay in the impossibility of concentrating, grading, and proportioning the steam. Consequently steam could only be applied to large surfaces, and even then it burned the contiguous healthy tissue and the hands of the operator.

The principle now followed by Dr. Holländer is to gradually heat the diseased tissue from the degree of simple superficial burning to complete cauterization, but without contact, in opposition to the immediate destruction by contact with the hot iron or the

Paquelin cautery. Since this could not be realized by the use of steam, the next step was to try hot air. For this purpose an apparatus was constructed with which it was possible to apply hot air, proportioned and graded at will.

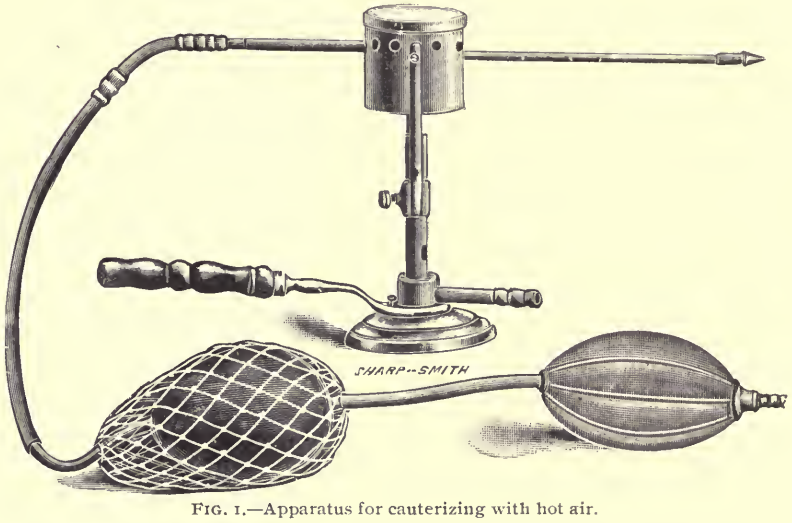

FIG. 1.—Apparatus for cauterizing with hot air.

The simple, handy apparatus (Fig. 1) which fulfilled these conditions consists essentially of a hollow metal coil ending in a supply and discharge tube. The coil is connected with a Bunsen burner, and brought by it to a glow. When, after a few minutes, red heat is reached, the heated air is forced out at will through the hot coil by means of a simple pair of bellows. The air under pressure, and escaping in jets, has a temperature of about 300° C. For a simple test of the efficiency of the apparatus, a piece of white paper held at a distance of about two centimeters in front of the opening of the discharge tube should be carbonized immediately by the stream of hot air. By means of this apparatus it is possible to concentrate the hot air upon nearly as small an area as with the Paquelin cautery. For example, an eyelid can be burned without injuring the surrounding tissues.

The experiments, which have been collected from about fifty separate cauterizations, refer especially to the treatment of lupus vulgaris. The simple application by hand, the concentration attainable, and the degree of heat, three times as great as in any other way, assure the adaptability of this method also to affections which have hitherto been treated with other thermocaustic means. In

gynecology, especially for uterine hemorrhages and infections, hot-air treatment will displace the defective vapor method. The speedy healing of areas affected by syphilis, and in one case of phagedenic ulcers, invites further research in this direction.

As to the technique of the operation, the first simple cases were operated upon without an anesthetic. In these it was found that the local cauterization caused intense pain, until the outer skin had distended like a balloon. The further burning was less painful. More advanced cases were only treated under an anesthetic, and these developed the surprising fact that patients awakened entirely free from pain. At first this could not be explained. It seems that the peripheral ends of the nerves are so affected by the deep cauterization that their function is destroyed. An extreme example of this fact was observed in the case of a young girl, half of whose face had been cauterized on account of widely diffused lupus, and who on awakening from the anesthetic threw out her arm, burning it against the hot apparatus. She complained only of this superficial burn, while her face was free from pain.

No unpleasant effects resulted from local burning, not even after the first (somewhat timorously undertaken) cauterization was passed, although extended areas on the face, head, and neck were cauterized. In no case did infection follow, and in no case did infiltrates form or other complications arise. The apprehension that a thrombosis might form in the superficial veins of the neck, or that the local effects of heat might cause some injury to the head, is groundless. Evening temperatures as high as 37.8° C. were reached repeatedly.

Two degrees of treatment are distinguished — absolute and relative cauterization — which are applied according to variations in extent and depth. The line dividing the two is indefinite.

Relative cauterization is a vorstadium of the absolute, which latter consists in drying up and carbonizing the diseased parts. If the hot air is directed to a point on the skin, the epidermis puffs up balloon-like, and becomes white during contraction, subsiding like a peristaltic wave. This contraction depends for the most part on the appearance of a complete ischemia and anemia. Unquestionable proof of this is based upon the observation that this peristaltic movement of the skin is absent in the cauterizations in Esmarch's anemias. If hot air is further applied, the moist white skin takes on a yellow color. The limit of relative cauterization is reached when this tan color assumes a dry luster. This stage, whose characteristic signs are naturally only to be accurately determined by

clinical experience, is best designated as relative cauterization, because the skin so treated is only partially necrosed. This partial necrosis occurs only in the diseased areas, as the healthy skin for the most part regenerates again. If the cauterization is carried further, especially for a longer time at the same point, and with the closest proximity of the apparatus, a permanent necrosis of the cutis ensues and the stage of absolute cauterization is reached. Before the operator possesses the necessary experience he should cauterize too little rather than too much, for the effect is usually overestimated. One can ascertain the depth of the burn by small incisions or by probing.

As to the differences between absolute cauterization by hot air and by the Paquelin, the Paquelin immediately destroys exactly what it touches, by simple contact, whether the part be diseased or healthy. It is in the nature of an effect by contact that often the healthy part is destroyed while the diseased part remains, as there is no absolute certainty of contact. A more important difference lies in the fact that in Paquelinizing no indirect thermal effect is produced on the neighboring tissue, so that only the cells in immediate contact are destroyed. Therefore, in eradicating a single nodule, healthy tissue must be destroyed in order to have any prospect of definite results. In absolute cauterization there occurs a commensurate necrosis, and accordingly the danger of leaving lupus is less. In how far this method, aside from destroying the diseased tissue, eradicates the cause of the disease by heating the tissue which is not injured to the point of definite necrosis, can only be determined by experiment. The difficulty of creating semipathological conditions in animals—that is, keeping an infection permanently local—leaves little prospect of obtaining scientific data for this investigation. The knife is the only competitor of absolute cauterization. If it is a question of destroying a lupus whose seat, extent, and particularly its depth, makes a radical removal necessary, absolute cauterization offers a more favorable prognosis. The results of absolute cauterization can best be appreciated from the inserted cuts from photographs of Dr. Holländer's cases.

Relative cauterization is of special significance and the chief point of the method. Lupus preferably attacks the elevations and protuberances of the face, and when extirpated disfigures the face, and subsequent plastic corrections, even at the hands of a master of this art, give only unsatisfactory results. Patients are often met in whom the lupus, because of inadequate treatment, attacks the whole face and neck and covers them as with a mask. In these

cases the methods hitherto in use have accomplished little. The slight prospect of a measurable radical success is clouded by the cicatrix which results from each operation, in which diseased and healthy tissue is alike destroyed. Just at this point cauterization by hot air steps in with success. It has been established that healthy and diseased skin behaves differently under relative cauter-

FIG. 2.—Extensive lupus of the face of fifteen years' duration, during which time all the usual methods of treatment had been employed.

ization. If the stream of hot air is directed upon a focus affected with nodules, certain peristaltic movements of the skin are observed, as described previously. The healthy connective tissue from the thermal effects becomes ischemic, contracts, and grows quite white. In this active contraction and evacuation of the blood the lupus area cannot participate because the tuberculous and lymphatic

tissues have none, or only modified, blood-vessels. The tubercles, even such as escaped attention before, protrude now from the healthy parts of the contracted skin and are acted upon by the stream of hot air. These ischemic parts, which naturally have suffered severely by hot air, are replaced again after a few days with blood, while the tubercles and diseased tissue slough. An evidence

FIG. 3.—Same patient after four treatments. From a photograph not retouched.

of this fact is seen after such a cauterization. A scab the size of the hand appears over the burned surface, and in the center of the granulated surface islands of epidermis form, through whose confluence in a short time large areas are covered with cuticle.

In absolute cauterization this is not the case. Here a scab grows from the margin towards the center. From this fact an advantage results not to be undervalued, which is that in relative cauterization

a scab and the consequent shrinking into a scar are almost entirely avoided. Figs. 2 and 3 show the result of a relative cauterization. This patient suffered for fifteen years with lupus and had almost a leprous appearance, and for that reason had been banished from human society, although during those years he had tried every conceivable external and internal method of treatment current at the time. Fig. 2 shows the patient at a stage before the operation,

FIG. 4.—A woman 20 years of age, with lupus of the cheek. Before treatment.

and Fig. 3 shows the patient after treatment, showing how he had again assumed a human appearance. Particular attention should be given to the entire absence of a scar around the eyes and lips. It is self-evident that an absolute, radical success could not be had at once by a single relative cauterization. At this stage of cauterization there was left in some places a few nodules which had to be removed at a second sitting.

The after-treatment is simple. The burned parts must be carefully covered with a lanolin dressing, and the first dressing should remain three or four days, if possible. The edematous swelling of the eyelids subsides in a day or two. The treatment of the granulating surfaces, which quickly free themselves from the necrotic parts, is that ordinarily used. The extremely offensive smell of the bandage during the first week disappears after the lupous parts are thrown off. Painting the granulating surfaces lying between the

FIG. 5.—The same patient one year after treatment. No relapse.

spots of epidermis with a three-per-cent solution of silver nitrate is excellent for the formation of the scurf. Moist bandages are in general to be avoided. Cicatrization is usually rapid, but in the case of an old lady suffering from lupus of forty years' standing, without waiting for cicatrization, one cauterization of the widely extended lupus followed another, and in consequence a very tardy cicatrization ensued. For this reason, therefore, it is wise after the first cauterization to await cicatrization before attempting a second in the same place.

As far as the question of curability and recurrence is concerned, but one case had been observed to return, which cannot be attributed to the method. This recurrent case occurred in a young girl whose whole body, including nose and cheeks, was covered with lupus. The patient presented herself after several months' treatment of the face with a perfectly smooth, white, unsuspicious scar, except at the tip of the nose, where there was a small tubercular ulcer probably infected from some other part of the body, and in the immediate vicinity of which several small nodules developed. The rest of the scar remained intact.

FIG. 6.—Face and neck involved; one-half face treated, with no recurrence after one year.

Fig. 6 presents an unusually interesting case, referred to Dr. Holländer by Professor Lassar, of a young girl whose entire face and neck was covered with lupus. As a crucial experiment one-half of the face only was cauterized, and within one year this half was converted into a perfectly smooth scar, free from nodules. From this illustration one can trace the grading on the forehead of that part free from scar (which would have contracted if the knife had been used) to that of lupus. This procedure of treating one-half of the face only, leaving the other half untouched, was performed for scientific purposes solely.

In speaking of the cure of lupus, the same rule holds good as in speaking of a cure of any malignant growth.

17 LINCOLN AVENUE.

CAPUT OBSTIPUM MUSCULARE.

BY M. L. HARRIS, M.D.,
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The early notions or fancies concerning the cause and nature of caput obstipum musculare, or torticollis, have but a historical interest and need not be mentioned here.

The first real knowledge of the subject may be said to date from Strohmeyer's article in 1838. Previous to that time the trouble was supposed to be congenital, and hence of intra-uterine origin, but Strohmeyer expressed the opinion, based upon personally observed cases, that the condition was not a congenital one, but was due to lacerations of the sternocleidomastoid muscle produced during labor, with resulting cicatricial contraction. This opinion prevailed almost exclusively until 1884, when Petersen revived the old Dieffenbach idea of an abnormal position *in utero* producing a congenital shortening of the sternocleidomastoid muscle with deviation of the head in a manner analogous to the production of congenital talipes. Petersen defended his opinion quite earnestly, and for several years the controversy waged between the adherents of Strohmeyer on the one hand and Petersen on the other.

A gradual accumulation of facts, however, has finally furnished a preponderance of evidence in favor of an intrapartum trauma as the primary factor in a large majority of all cases, and Petersen's congenital shortening of the muscle, while not considered absolutely impossible, is admitted to be so rare that it may practically be omitted from consideration in a study of the etiology of these cases. The facts which led to this conclusion may be briefly considered: Küstner showed that intrapartum lacerations of the sternocleidomastoid muscles with the production of greater or smaller hematomata are quite common. These lacerations are not due necessarily to excessive traction, but may occur as a result of rotation of the head in a normal labor.

Küstner as well as Kader was able to produce similar lacerations on the child cadaver by rotation of the head. Spencer, in 300 autopsies on the still-born, or babies dying shortly after birth, found fifteen cases of laceration of, and blood extravasation into, the sternocleidomastoid muscle. Not all cases of laceration of these muscles are followed by contraction, as Powers found in 106 cases of such injury that *restitutio ad integrum* occurred in 75 per cent.

It is thus evident that some other factor in addition to the trauma is essential to the production of the subsequent contraction. This, according to the pathologico-anatomical studies of Kader, and

the experimental work of Heller, has been found to be an infection. The histologic changes are such as are usually observed in inflammation of muscle. The transverse striæ are lost, there is round-cell infiltration, the muscle elements undergo longitudinal fibrillation and segmentation and gradually disappear, being replaced by new connective tissue. Various stages of the process may be observed in different parts of the muscle.

A peculiar feature of the changes is their slow progressive character. Starting from one or more centers the process extends slowly until the greater portion of the muscle often becomes involved. This progressive feature is so characteristic that Kader has applied the term myositis fibrosa progrediens. I present photomicrographs of sections of an exsected muscle showing these changes.

Particular attention is directed to the marked changes in the blood-vessels. One specimen in longitudinal section shows a remarkably tortuous or serpentine course of the vessels. Upon transverse section the vessel walls are markedly thickened, showing great subendothelial proliferation. The vessels are surrounded by much new-formed connective tissue, which has taken the place of muscular tissue. Much of the muscular tissue has lost its muscular character and become converted into fibrous tissue.

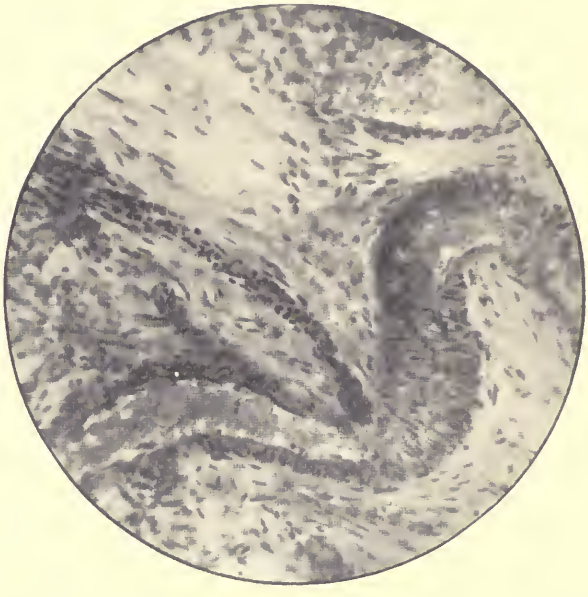
The inflammatory changes are not usually limited to the muscle involved, but extend to and involve the muscle sheath, the adjoining fasciæ, the vascular sheath, the lymphatics, etc. The muscle thus becomes firmly attached to the surrounding structures. The process frequently extends to adjoining muscles, as for instance the anterior portion of the trapezius, the scaleni, platysma, etc.

It was contended for a long time that the process was not inflammatory in its nature, nor the shortening due to cicatricial contraction, for the reasons that a muscle when divided or ruptured usually heals not with shortening but with lengthening, and that shortening does not commonly follow even a suppurative myositis. The experimental work of Heller, however, has settled this question.

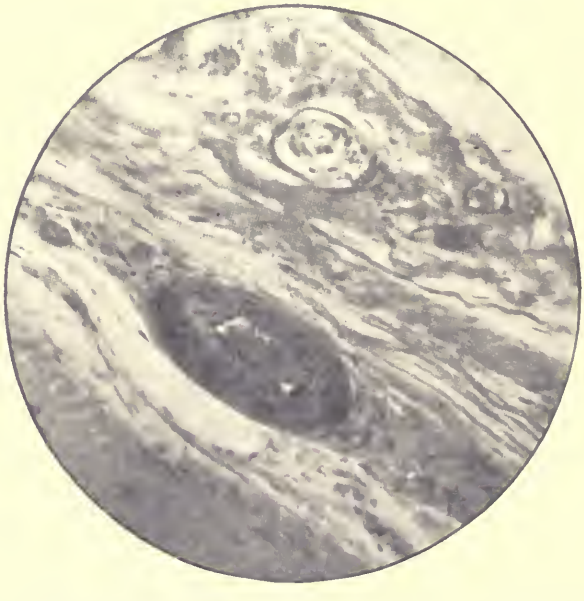
By producing partial or complete rupture of muscles in animals, and infecting them, he was able to obtain contracted shortened muscles exhibiting identical histologic changes with muscles exsected in caput obstipum musculare.

Presenting still further confirmatory evidence of the inflammatory nature of the process may be mentioned the cases that occur following the acute infective diseases, as diphtheria, scarlatina, etc., and following traumata to the sternocleidomastoid muscle in adults.

Considerable emphasis is placed on the fact that the affection is



From sternocleidomastoid muscle. Tortuous thickened vessels. Connective tissue proliferation. Spencer obj. ¼ inch, oc. 1½ inch.



From sternocleidomastoid muscle. Subendothelial proliferation of blood-vessels. Longitudinal fibrillation of muscle. Spencer obj. ¼ inch, oc. 1½ inch.

of a progressive, inflammatory nature, as this has an important bearing on the method of treatment.

As the chief controversy has been between the congenital theory on the one hand, and the postnatal inflammatory theory on the other, we may briefly recapitulate the facts which have established the supremacy of the inflammatory theory.

Chaussier found, upon examining 23,292 infants in the Paris Maternité, 632 congenital malformations, but not a single case of torticollis.

Lacerations of various degrees of the sternocleidomastoid muscles are quite common in the new-born, particularly following difficult forceps or breech labors; 90 per cent of the cases of torticollis in Mikulicz's series had followed breech or difficult forceps labors. The contraction is not present at birth, but develops slowly thereafter. The time at which it is first perceptible varies from a few days to several months after birth. The contraction is usually preceded by a visible swelling at some point on the sternocleidomastoid muscle, due to the hematoma following the laceration, plus inflammatory exudate.

The histologic changes found in the muscle upon examination with the microscope are those of a chronic myositis. The inflammatory changes are not limited to the muscle itself, but extend to and involve surrounding structures, such as fasciæ, muscles, and the lymph glands receiving tributaries from the affected area.

The contractions occasionally follow the acute infectious diseases, including rheumatism and traumata. Identical conditions have been produced experimentally in animals by lacerating the muscle and infecting with pathogenic microbes. These facts would seem to establish the nature of the disease beyond controversy.

The clinical history is familiar. I would simply call attention to the fact that early during its course it is progressive. Nor will we consider the secondary changes in the growth of the face, head, spine, etc. The treatment may be discussed under four heads: Orthopedics, subcutaneous myotomy, Volkmann's open myotomy, and myectomy.

By orthopedics is meant the attempt to overcome the contraction of the muscle, and thus the deformity, by means of braces, bandages, gymnastics, massage, etc., etc. As it is almost impossible to overcome a pathologically contracted muscle with any force short of producing laceration or rupture, this method is successful only in mild cases. The method is furthermore tedious, troublesome, and prolonged, and will not be further discussed.

When subcutaneous tenotomy and myotomy came into vogue,

the operation was at once applied to torticollis. As the muscle is not the only part involved, the process usually extending to the muscle sheath, surrounding fasciæ, etc., the results of simple myotomy were not as satisfactory as had been hoped; furthermore, this method had to be followed by a prolonged course of orthopedics, and relapses were common.

The close proximity of important blood-vessels and nerves to the sternocleidomastoid muscle makes the too free use of the knife in the dark somewhat dangerous, hence Volkmann proposed to divide the muscle by the open method. A free incision is made through the skin, thoroughly exposing the muscle, which may now be divided without danger to contiguous structures. Not only should the muscle be divided, but also all contracted bands of fasciæ and connective tissue which interfere with the correction of the deformity.

This method, while a great improvement over the subcutaneous myotomy, is not entirely successful in all cases, as the muscle cannot be released fully from its surrounding attachments by simple division, and imperfect results with a tendency to relapse follow. In view of the unsatisfactory results following former methods, and based upon the progressive inflammatory nature of the affection, Mikulicz in 1895 proposed complete extirpation of the sternocleido muscle in these cases.

A free incision exposes the muscle, which should be thoroughly dissected out, together with its sheath and all the surrounding involved fasciæ and connective tissue. If other muscles, such as the trapezius or platysma, are implicated, they should be removed to the extent of their involvement.

It will seldom be necessary to carry the extirpation higher than the point where the muscle is transfixed by the spinal accessory nerve, as the lower half of the muscle is the part most frequently involved; but should the upper part also be affected, it should likewise be removed, the spinal accessory nerve being preserved by careful dissection in order that the anterior portion of the trapezius muscle be not paralyzed.

During the healing process the head should be fixed in an overcorrected position. The advantages of this method are: the thorough removal of all contracted tissues permits at once complete correction of the deformity, and the tendency to recontract having been thus got rid of, the necessity of prolonged postoperative orthopedic treatment is obviated.

I will detail but one case from the number I have operated, as it illustrates typically the points mentioned: Miss M——, aged 10 years, born of healthy parents; first child. Labor was very diffi-

cult, lasting over thirty-six hours; head presented; weight twelve pounds; was quite asphyxiated when born, and energetic efforts were made to induce respiration. On the fourth day the mother noticed a swelling on the left side of the neck as large as her thumb. Her physician prescribed a liniment for it, and the swelling gradually disappeared. The mother always thought that side of the neck harder than the other, but not until the child was two years old and walking around was it noticed that her head was not held quite straight, but inclined somewhat to the left. The inclination increased gradually until the age of four years, since which time it has remained about the same. She was ten years of age when she came to me in August, 1897. An examination revealed the head inclined to the left with the chin rotated to the right. Left sternocleidomastoid very prominent, hard, and markedly shortened; clavicular portion seemed much harder than the sternal portion. Distance from the left mastoid to the left sternoclavicular joint, 7 centimeters; right, 11 centimeters. Left mastoid to acromion, 10 centimeters; right, 14 centimeters. Owing to an inclination of the sternum and raising up of the left clavicle, the left sternoclavicular joint was two centimeters higher than the right. The retarded development of the left side of the face was very striking; the sagittal line of the face presented a marked convexity to the right. There was the usual compensatory spinal curvature—cervical right convex, dorsal left convex, lumbar right convex.

On August 19, at the Policlinic Hospital, the sternocleidomastoid muscle was removed as far up as the spinal accessory nerve, together with a portion of the platysma, the muscle sheath, and considerable fasciæ which were involved in the contracted mass. The head was placed at once in an overcorrected position, where it was retained for about two weeks, when the dressing was removed and the child sent home. A system of light gymnastics was prescribed in order to hasten the correction of the spinal curves.

The result has been perfect; in a year and eight months even the asymmetry of the face has almost entirely disappeared.

In conclusion, the points I wish to make are: First, caput obstipum musculare is a postnatal chronic inflammatory condition due to infection affecting principally the sternocleidomastoid muscle, usually following an intrapartum laceration of the muscle, and accompanied by contraction; secondly, the affection is primarily for a variable though considerable time progressive; thirdly, the best treatment is complete extirpation of the contracted muscle with the involved surrounding tissues.

100 STATE STREET.

BOOK REVIEWS.

A Text-book of Obstetrics. By Barton Cooke Hirst, M.D. Philadelphia: W. B. Saunders. 1898.

A work on obstetrics by Professor Hirst, who has contributed so much to the literature of obstetrics, and whose work upon monsters will always remain one of the classic contributions to the subject, cannot but be received with great interest. A cursory examination of the volume will show, first, that it is written in a clear, forcible, succinct style. It is entirely free from redundancy, and yet nowhere is clearness of expression sacrificed in order to keep the text within narrow limits. The volume is not a large one, having but 846 pages, and included within the text are 653 illustrations, for the most part taken from original sources, a number of these being colored plates. We have had occasion, in other reviews, to refer to illustrations which seem to be placed in the text largely for the purpose of inserting a picture, as they did not seem to serve any useful purpose in illustration. Those chosen for this work, however, are exceptionally clear, and each of them serves some valuable purpose in illustrating the text.

It is impossible for us to review in detail a work so compactly written and covering such an extended subject; we can only refer to certain portions of the volume, which may be taken as representative of the entire work.

Chapter V deals with the diseases of the fetus; to it are devoted twenty-six pages, which include two colored plates, one showing diseases of the bones characteristic of fetal syphilis, and the other showing characteristic skin changes. The general relation of infectious diseases to the fetus is described, and the experimental work of Brauell, Davaine, Chamberland, Runge, and others is given. This is followed by a description of the known infections *in utero* and those disorders which are not infectious. Among these latter, rachitis is accorded a page in the descriptive text. The author assumes that these conditions are brought about by the unhygienic surroundings of the mother, though he admits that it is difficult to explain some of the defects underlying them.

There is a distinct though somewhat qualified acceptance of the influence of maternal impressions upon the embryo, though the author claims that most of these cases are to be explained by chronic constitutional states of the parents: "But there still remain well authenticated cases of congenital defects or peculiarities, which bear too strong a resemblance to the causes of the impression upon the mother during pregnancy to be dismissed as mere coincidences."

In the treatment of inevitable abortion the author leans to a wise eclecticism as between expectant and active treatment when he says: "In the hands of a general practitioner, without special knowledge of gynecological technique, the best results would probably be secured by the expectant treatment, so long as there was no fever, no excessive hemorrhage, or no odor of putrefaction to the discharge. In the hands of a trained gynecologist the best and safest treatment of an abortion is an aseptic curettage."

In the treatment of extra-uterine pregnancy the author thinks that as soon

as the diagnosis is established, whether the sac is ruptured or not, the only treatment worthy of consideration is a celiotomy. Electricity he regards as uncertain, and recoveries ascribed to its use are due to Nature's efforts to effect a cure. Injections and puncture of the sac should be relegated to the category of discredited procedures. In certain favorable cases, in which a trained nurse is kept in constant attendance and the physician can quickly reach the patient, one may wait in the hope that atrophy of the sac will occur. This, however, is not to be recommended as a rule of practice.

There is an excellent discussion of the non-infectious fevers of the puerperal state, among which we note a fever which he characterizes as simple nervous stimulation or a disturbance of balance in the heat-controlling centers of the brain, occasioned by a profound psychical impression, such as grief, anger, or fear. The possibility of the emotions acting in a secondary manner upon the fluids or glands of the body so as to cause a production of heat is recognized. A striking chart is given in which a temperature rose from normal to 105° on the evening of the day an operation was decided upon; the following four days the temperature was again normal. Among the other non-infectious causes of fever are mentioned exposure to cold, constipation, cerebral disease, eclampsia, insulation, and syphilitic fever, the latter being illustrated by a chart showing the striking atypical range of temperature in this disease.

In treating of puerperal sepsis the work of Semmelweis and Holmes, which was referred to in MEDICINE for May, 1899, is considered by the author, giving credit for the discovery of the infectious nature of this disease equally to these two, and also to James Y. Simpson, whose paper was published in 1850. The relation of Holmes and Semmelweis to the discovery of puerperal infection is, we think, characteristically stated where he says: "It is to be hoped that the medical world of to-day and of the future can never again be deaf and blind to such a plea as that of Holmes or to such a demonstration as that of Semmelweis." The later theories of infection of the puerperal tract are adequately discussed.

Regarding the antiseptic serum of Marmorek, he says that the judgment on the serum-therapy of streptococcic infection must at present run as follows: "It requires a long time and especially virulent inoculations to obtain a serum with antitoxic and germicidal properties. There is a possibility that this serum may contain dangerous toxins, and that the treatment may be more dangerous than the disease. There is a streptococcic infection so virulent that the antitoxin will be of no avail, no matter how strong it may be." The author goes too far in the above where he says that the serum may contain a toxin. These serums contain no toxins, and we have no reason to think that one serum is more dangerous than another. The real difficulty in puerperal fever is in the recognition of the particular variety of the infection; thus, antistreptococcic serum would have no power over the colon bacillus or other associated microorganisms. He is correct when he states that the clinical results have so far not been strikingly encouraging.

THE PRACTICE OF OBSTETRICS. By American Authors. Edited by Charles Jewett, M.D. New York and Philadelphia: Lea Brothers & Co. 1899.

This volume of 768 pages, 441 engravings (34 of which are colored), and 22 colored plates, forms one of the most notable additions to the literature of obstetrics of recent years. It is a composite work built on a plan much in vogue

in recent years. The material is contributed by nineteen authors representing for the most part the leading workers in this field in the entire country. Unity of design is somewhat lacking in the work before us; being as it is the work of a number of contributors, the different portions are not of equal merit. It is a collection of monographs which are especially full and complete upon the subjects of which they treat, but between the titles of which there is much information which escapes notice. We can best illustrate this by referring to Part VII, which deals with the pathology of the puerperium. It is composed of four chapters—one dealing with anomalies and diseases of the breasts, another with puerperal insanity, the third with puerperal infection, and the fourth with malformations, injuries, and diseases of the new-born child. The first of these chapters, dealing with anomalies of the breasts, is complete; the second, that dealing with puerperal insanity, is a fairly complete statement of that subject; while the article on puerperal infections forms the best single contribution to the literature on that subject that has so far appeared.

The matters which have escaped notice in the part dealing with the puerperium are supra- and subinvolution. Related to these are retained placenta and membranes and displacements of the uterus, which certainly should be considered in this connection. There is no adequate treatment of the intercurrent maladies in the puerperal state, the diagnosis of which is of very great importance. The repair of the genital tract is treated of under obstetric operations. It will be seen from an analysis of the foregoing that dividing the pathology of the puerperium into four sections alone leaves much that should be mentioned in that connection unsaid.

The work is divided into eight parts and thirty-four chapters, dealing with the following topics: Anatomy, physiology of pregnancy, physiology of labor, physiology of the puerperium, pathology of pregnancy, pathology of labor, pathology of the puerperium, and obstetric surgery. The authors give references in very unequal measures: thus the chapter dealing with puerperal infection is especially full of references given in the form of foot-notes, while that dealing with version is quite as full, but the references appear in the body of the text. Some of the writers make very little reference to the literature; for example, the article dealing with ectopic gestation contains almost no reference to the work of others.

Our deliberate judgment after carefully examining the work is that it forms a magnificent contribution to the literature of obstetrics, especially as it is beautifully issued by the publishers and profusely illustrated. As a collection of monographs it is unequaled, some of them being the best contributions that have recently appeared on the various subjects of which they treat. As a systematic text-book upon obstetrics, particularly for beginners, it does not compare with some works more recently issued.

A Book of Clinical Lectures. By W. Arbuthnot Lane, M.S. London: The Medical Publishing Co., Limited.

This little volume is replete with original ideas, many of which are worked out carefully to their extreme limits, and the results obtained are stoutly upheld in spite of the fact that they differ from the views ordinarily entertained. In fact, each lecture is a plea against accepting common usage without careful individual thought, for "the greater part of surgery has been a matter of creed and tradition, and has not been arrived at in any reasonable manner."

The lectures are upon various subjects, as cleft palate, acquired deformities, joint diseases, treatment of simple fractures, of inguinal hernia, and antrectomy in otitis media. Each lecture is extremely interesting and has so many good points that it is impossible even to name them in a review. As an example of the author's method, let us follow one of the ideas to the ultimate result he arrives at. He shows first that constantly repeated actions alter the form of the skeleton in time, by pressure changes, by causing new growth of bone, and by altering the character of the joints, enlarging the scope of some and even creating completely new joints at times, or limiting the motion even to complete ankylosis, with marginal bone formation, in others. This is not abnormal, as is usually supposed, but is only the normal result of time and use or disuse; and by such changes in the skeleton the author can frequently tell the character of the work of the subject during life.

These changes which limit the joint motions, and which are brought about normally by constant and long-continued pressure, can also be caused by a sudden pressure or bruise of the joint or by suddenly altered relations in the component parts of the joint, especially in adult life; and when so caused they constitute what the author calls mechanical arthritis. This is most often mistaken for rheumatoid arthritis, with which it has no relation whatever. To prevent this mechanical arthritis which follows the altered relations due to an imperfectly set fracture, and which is far more common than is ordinarily supposed, the author advises immediate operation and uniting the fragments in perfect apposition in almost all, even simple, fractures; for he finds that the usual methods of treating fractures are incapable of holding the fragments in apposition or of maintaining the normal relations of the parts.

The book is well worth a careful study.

Atlas of the External Diseases of the Eye, Including a Brief Treatise on the Pathology and Treatment. By Prof. Dr. O. Haab, Zurich. Edited by G. E. de Schweinitz. Philadelphia: W. B. Saunders. 1899.

This forms one of the Saunders' medical hand atlases. It contains seventy-six colored plates and six engravings. The plates are reproductions in color and furnish a striking picture of the diseased conditions which they portray. These atlases are in a sense clinics in books, and there is no department of medicine which lends itself so readily to illustration of this kind as does that dealing with external diseases of the eye. The work opens with a short chapter on the examination of the eye in disease; this is followed respectively by the diseases of the lacrimal apparatus, eyelids, conjunctivæ, sclera, iris, ciliary body, lens, and orbit. A separate chapter is devoted to the consideration of glaucoma. The plate of each disease is accompanied by a brief description of the case from which it was made. Accompanying this is a running comment upon the diseases mentioned in the plates, together with the treatment.

The series of medical hand atlases is exceedingly valuable from the standpoint of the practitioner and of those who do not have ample clinical opportunities, as they are particularly accurate reproductions of the appearances presented by disease. The more typical forms of these disorders can easily be diagnosticated by a reference to the plates.

EDITORIAL COMMENT.

MALPRACTICE SUIT BASED UPON INJURIES CAUSED BY X-RAYS.

Interest attaches to a suit which has recently been tried in Chicago, and which is said to be the first in which damages are alleged as the result of the application of the *x*-ray. The suit was against Dr. O. L. Schmidt and Mr. W. C. Fuchs. The facts shown in the case were substantially as follows: On September 2, 1895, the plaintiff sustained a severe fracture of the right ankle. The foot was treated in the usual way, and at the end of three months he was able to get about with the aid of crutches. The following May he was able to attend to his duties, and it was stated at the trial that he was practically as well as ever, with the exception of a slight stiffness in the right ankle. He claimed that there was no pain, but that it would swell some during the day, which would disappear during the night. On September 9, 1896, one year and one week after the accident, he submitted to an examination by the *x*-ray, the exposures being two in number and occupying thirty-five and forty-five minutes respectively, the tube being placed from five to six inches from the ankle, one being a dorsoposterior and the other a lateral exposure. He stated that he expressed a complaint of quite severe pain in the foot during the exposures. Three days later a slight redness appeared between the first two toes, in which inflammation spread in three weeks so as to include the entire surface of the top of the foot. This was opened by a surgeon, but the inflammation continued to spread until it covered the whole foot and ankle and formed an ulcer, which is stated to have penetrated the deeper muscles of the foot. November 28, 1896, two months after the exposures, the foot was amputated on account of the ulcers and pain, but the persons making the amputation stated that they were influenced more in this decision by the fact that prior to the *x*-ray exposures the foot had been stiff. The primary amputation wound healed rapidly, but later an abscess formed in the stump which necessitated an operation, which was repeated some weeks later. In August, 1897, a second amputation was made, which included two or three inches of the fibula and an exsection of the nerves. Later in the same month a third amputation was made, by which four inches of the tibia and four and one-half inches of the fibula were removed, and with it all of the cicatricial tissue following

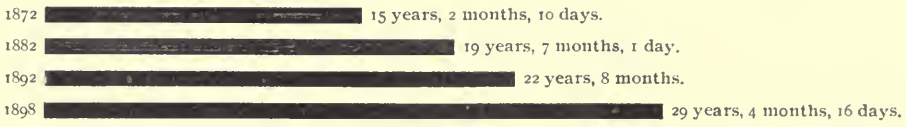
the last amputation. This last amputation was followed by a relief from pain.

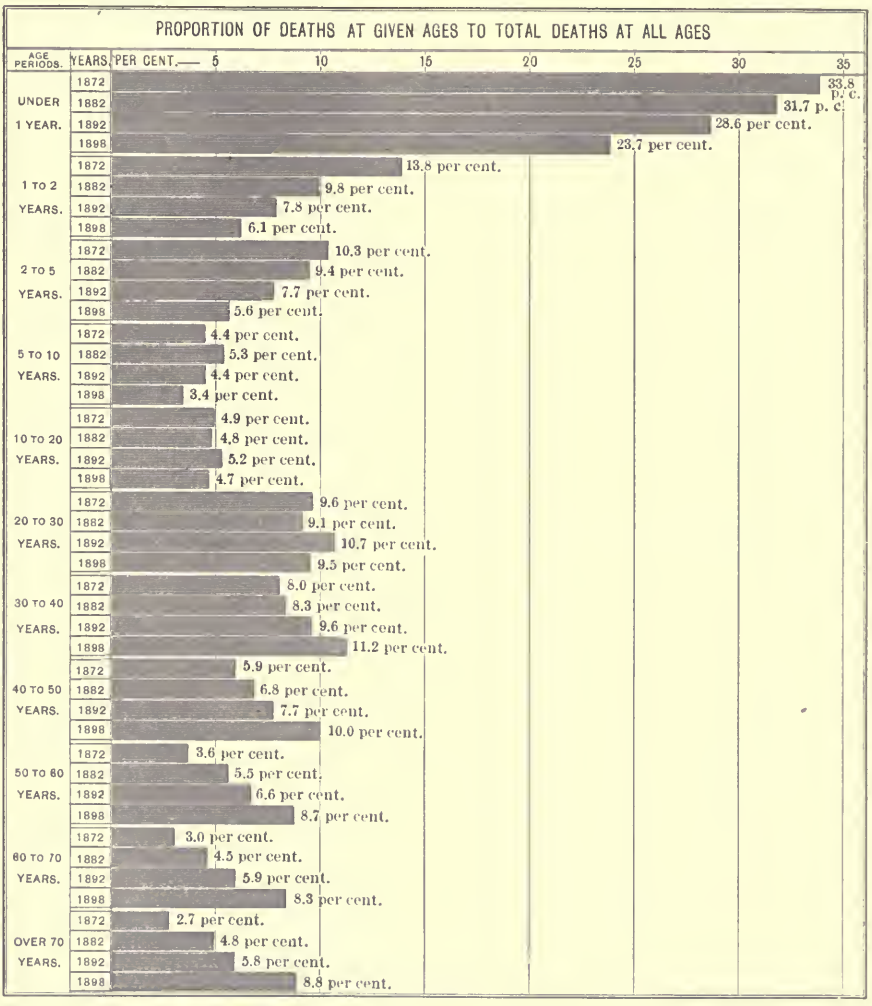
The jury returned a verdict in favor of the plaintiff, assessing the damages at $10,000. It is difficult to see how the jury arrived at this verdict when properly instructed under the rulings regarding malpractice in the State of Illinois. At the time when the exposures were made it was not known to the majority of the profession that the *x*-rays were accompanied by any injurious consequences. But one publication, and that in a German journal, had appeared up to that time which noted this fact, which later became a subject of extended comment. The only possible rule of law which would make the defendant liable in this case would be one in which a physician assumes all the unknown risks attendant upon an operation or procedure. To constitute negligence, it is not sufficient to show that evil consequences followed a certain procedure, but it must also be shown that these evil consequences were the direct results of some action or some want of skill on the part of a surgeon in the performance of the operation. The degree of skill which he must have is such ordinary knowledge of the matter in hand as is common to the profession. Judged in the light of such a rule, the verdict in the above case should have been for the defendant. The rule of law is so clearly violated in this case that the higher courts cannot sustain the verdict of the jury.

THE INCREASING DURATION OF LIFE.

In the *Monthly Bulletin of the Chicago Health Department* for April, 1899, is an exceedingly interesting study of the average age of decedents during the past thirty years. It is stated that "measured by the average age at death of all who died in Chicago thirty years ago and those who died last year, the average duration of life has more than doubled in a single generation." The uncertainty of an average death-rate compared with the total population, which at the best must be estimated, is pointed out. The government census is taken at decennial periods, and no matter what care is exercised in compiling it, the total population as given would only hold good for a comparatively short time. There can, however, be no doubt of the accuracy of the figures based upon the average age of decedents; the age is given as a part of the burial certificate, and it is impossible to dispose of a dead body without filing such a certificate with the Board of Health.

The average age of decedents in Chicago is shown by the following table:




PROPORTION OF DEATHS AT GIVEN AGES TO TOTAL DEATHS AT ALL AGES
AGE PERIODS.
YEARS.
PER CENT.— 5 10 15 20 25 30 35
UNDER 1 YEAR.
1872 33.8 p. c.
1882 31.7 p. c.
1892 28.6 per cent.
1898 23.7 per cent.
1 TO 2 YEARS.
1872 13.8 per cent.
1882 9.8 per cent.
1892 7.8 per cent.
1898 6.1 per cent.
2 TO 5 YEARS.
1872 10.3 per cent.
1882 9.4 per cent.
1892 7.7 per cent.
1898 5.6 per cent.
5 TO 10 YEARS.
1872 4.4 per cent.
1882 5.3 per cent.
1892 4.4 per cent.
1898 3.4 per cent.
10 TO 20 YEARS.
1872 4.9 per cent.
1882 4.8 per cent.
1892 5.2 per cent.
1898 4.7 per cent.
20 TO 30 YEARS.
1872 9.6 per cent.
1882 9.1 per cent.
1892 10.7 per cent.
1898 9.5 per cent.
30 TO 40 YEARS.
1872 8.0 per cent.
1882 8.3 per cent.
1892 9.6 per cent.
1898 11.2 per cent.
40 TO 50 YEARS.
1872 5.9 per cent.
1882 6.8 per cent.
1892 7.7 per cent.
1898 10.0 per cent.
50 TO 60 YEARS.
1872 3.6 per cent.
1882 5.5 per cent.
1892 6.6 per cent.
1898 8.7 per cent.
60 TO 70 YEARS.
1872 3.0 per cent.
1882 4.5 per cent.
1892 5.9 per cent.
1898 8.3 per cent.
OVER 70 YEARS.
1872 2.7 per cent.
1882 4.8 per cent.
1892 5.8 per cent.
1898 8.8 per cent.

Another table shows the average mortality in the different age periods for the last three decennia. A study of this table shows that the saving of life has largely been in childhood and youth, while the periods after thirty show a marked gain in the number of deaths of those in advanced years. This, as we have elsewhere

pointed out, must necessarily have a marked influence upon the mortality-rate from different diseases. The enormous increase in the death-rate from cancer, noted in England, has called forth extended comment by medical men, and various theories as to the origin of cancer; some attributing it to an increase in meat diet, and others to various concomitant and perhaps more or less correlated conditions. Recently, Park, of Buffalo, in a study of the statistics of New York in reference to cancer, made the startling statement that if the increase in the death-rate from cancer maintains the same ratio of increase that it has shown during the past four years, it will give a mortality-rate exceeding that of the infectious diseases and tuberculosis combined.

The statistics of Chicago, to our mind, furnish an adequate explanation of the enormous increase in cancer. This disorder belongs to the middle period of life, the decade from forty to fifty showing the largest proportion of cases. If the average age has nearly doubled, then the number of persons of advanced years has enormously increased. Consequently the diseases which are incident to middle and declining years are bound to increase. What is true of cancer is undoubtedly true of paretic dementia, tabes, Bright's disease, and other conditions dependent upon atheroma.

A NEW FACULTY AND ITS LOCALIZATION.

Wallace Wood, in the April 29 issue of the *New York Medical Journal*, claims to have discovered a hitherto undescribed anatomical basis for a function which he terms prothymia. Some four years ago he began preparing the brains of domestic animals by a dry process. After accumulating a considerable number of specimens he took them abroad to compare them with the brains of wild animals collected in the College of Surgeons of London and in the Jardin de Plantes of Paris. As a result of the comparison of his models of the brains of domestic animals, he "noticed an extraordinary roundness and fulness in the coronal or metopic region of the hemispheres of certain cows and horses, contrasting in a surprising way with the same region in other animals. I had this same roundness, this forwardness of front, forced upon my view when looking at the mesial surfaces of the brain of the Newfoundland dog, the terrier dog, and the sheep.

"The metopon, or anterior metopic lobule, in the Newfoundland dog presents an appearance of swelling forward or pushing or surg-

ing forward, while that of the pug dog shows a contrary tendency; it seems to slope or sag and hold back.

"This same willingness to come forward I found in the mesial metopic line of the black-and-tan dog, and this same willingness to come forwardness in the brain of the *Felis domestica*, the cat of either sex.

"The grand arch line of the brain of cats, as seen from the mesial surface, shows a back-upwardness, while that of good dogs shows a forwardness or forward-upwardness."

The author says if we translate this metopic or coronal curve into the language of psychology we have eunoia or prothymia. He significantly asks the question "if this willingness to come forward is not mental as well as cerebral? The horse comes forward willingly to be harnessed; the cow comes forward willingly to be milked; the dog comes forward willingly to fetch a stick from the water; and the sheep comes forward willingly to have its wool cut or its throat cut, or whatever you like.

"We turn now to the contrary mental disposition; the pig comes forward most unwillingly; the domestic cat comes forward always with a mental reservation. The temper of the pug dog is, I believe, quite unlike that of the Newfoundland dog. As for the wildcat, the lion, the panther, the wolf, suffice it to say here that they do not come forward with their metopic lobule or mesial metopic curve, but with something else; not with the metopic center, but with another center."

It seems to us that the author has stumbled upon a discovery; or perhaps we are scarcely justified in using this word, but rather state that he has found after diligent research upon other lines a most important fact in cerebral architecture. In observing the human we note the same back-upwardness that is to be found in the lower animals, and it is gratifying to know that this is due to a teratological defect in the metopic or coronal curve. The popular expression, "getting one's back up," is thus not to be ascribed to a simple infirmity of temper, as has often been done in the past, but is more correctly expressed as a surging forward of the anterior metopic lobule. We have always believed that the anatomical basis of psychology would have its beginnings in the study of the brain of the lower animals, but it seems to us that the author leaves us in considerable obscurity when he speaks of the wolf and panther as not coming forward with their metopic lobule or mesial metopic curve. He asserts that they come forward with a very different portion of their anatomy. Personal observation has convinced us

that the domestic bulldog comes forward in a different way from other domestic animals, in this respect resembling some of the fierce wild beasts. We are left in doubt in this case as to what portion of the cerebral mass brings him forward. If this could be identified it would be a step in advance, as these fierce traits are a menace to the life and happiness of others, and an identification of their anatomical substratum is the first step in their correction. It is to be regretted that the author did not include in his studies that animal which is *facile princeps* in back-upwardness and not-coming-forwardness, the domestic mule.

ABUSE OF MEDICAL CHARITY.

A lengthy article in the *Boston Medical and Surgical Journal* of May 4, 1899, discusses the subject of medical charity from the standpoint of general charitable relief. It is stated that all students of the subject are unanimous in their condemnation of the existing medical charity. Numerous quotations are given from the leading writers on charity organization and advanced workers in the philanthropic field, and they all condemn the existing system of free dispensaries and other methods of free medical aid. These means of relief are not the reaching out of a self-respecting man to help and be helped in turn, but a species of parasitism leading to degeneration or a reversion to a lower type. It is stated that the parasite fastens himself most readily upon the community through the medium of medical charity. This disease, which is named parasitism, is said to be latent in all of us, and indiscriminate charity of any kind develops a rapid and luxuriant growth. The development is shown by the statistics of Birmingham, where in the last twenty-three years there has been an increase of 56 per cent in the number of applicants for medical charity, though the population has increased only 13.8 per cent. In London the same story is told; in a period during which the population had a little more than doubled itself, the increase in out-patients had increased fivefold. In America it is about the same, or even a little worse story is told. It is estimated that nearly one-half of the entire population of New York City receives free medical treatment.

The effect of parasitism upon the medical profession is most deplorable, and it is stated that the survival of the fittest is beginning to mean the survival of the financially strong. The ethical soundness of the following propositions cannot be doubted: First, that medical advice is a marketable commodity representing an

investment of capital and the outlay of labor; secondly, that it is the duty of every community to make provision for sickness; thirdly, that it is as harmful to the individual and to the community to offer free advice and treatment as it is to offer free fuel, free food, and other necessaries of life.

Among the remedies which are suggested, and one which receives the strongest indorsement, is the Provident Dispensary system, providing the wage limit is strictly maintained. If this fundamental precaution is omitted, parasitism develops and the evils of the present system are reproduced and aggravated. The writer thinks the Provident system could be made to apply to in-patients as well as out-patients.

The magnitude of the dispensary and hospital evils can scarcely be appreciated, unless one reads some extensive study of the subject such as that under consideration. The profession which concerns itself so much with the public health, and is now especially urging that a medical man be appointed as one of the cabinet of the President of the United States, might wisely expend some of this energy in grappling with the vices surrounding the administration of our public charities, conditions which the profession has done so much to foster.

LAY TESTIMONY IN INSANITY CASES.

A by no means infrequent assertion formulated by the higher courts is a doubt of the value of expert testimony in determining the mental condition of an accused person. Undoubtedly this is largely brought about by the apparent discrepancy in expert medical testimony as brought out in the court. A fact that is not accented in these discussions is that the differences between experts are exaggerated, and the points upon which they agree are minimized to the vanishing point, in the trial of a case. Slight differences of opinion are magnified by counsel into great contradictions, and to such an extent is this carried that practical agreement on the essentials of a case is wholly swamped in the argument.

Various rulings govern the admission of lay testimony in insanity cases; in most States it is held that an opinion can be given by a lay person, providing the foundation for it is adequately stated. Lay opinions regarding mental capacity are sometimes of considerable value, particularly where it relates to the mental conditions of a prisoner prior to the onset of the alleged mental trouble. The associates and friends frequently appreciate quite early his departures

from a normal standard, both in conduct and thought, and it is in fixing the time and extent of this departure that lay testimony has its chief and perhaps only value.

A long experience has convinced the writer that the average layman's opinion as to the mental condition of a person who has not been long under observation, or who was not known to such person prior to the time of the development of the mental trouble, is of little or no value. An extended experience as physician to a jail in which a large number of accused persons were confined convinces him of the almost universal applicability of the rule. In every case within his experience where a person feigned insanity, the turnkeys and other attendants were convinced that the person was insane; in the true cases of insanity they were quite as confident that the person was not insane. The reason of this is not far to seek, for the sane person, in feigning insanity, does so always upon the lines of the non-medical conception of the disorder, and in this way convinces the lay person that he is thoroughly insane, and by the same token conveys to the schooled alienist unquestionable evidence of feigning.

THE VALUE OF MEDICAL SERVICES.

Recently the *Chicago Daily News* stated that the Cook County Board has had under consideration a plan, the adoption of which will stop the expense incurred by the State's attorney in employing expert medical witnesses in cases on trial in the Criminal Court, and by the coroner for making post-mortem examinations. We are informed that the President of the County Board has prepared resolutions to the effect that hereafter it shall be the duty of members of the attending staff of the Cook County Hospital, for and in consideration of membership in that body, to render such services as may be required of them by the State's attorney or coroner, as expert witnesses or examiners.

The staff of the Cook County Hospital gives a considerable proportion of its time to the treatment of the sick poor without compensation; it is now proposed that in consideration of this valuable privilege they shall make post-mortem examinations and attend to the legal business of Cook county without charge to the taxpayers. The idea that medical services are to be furnished without money and without price is gaining ground rapidly, and it is but a step from treating the paupers of Cook county to regarding Cook county itself and its citizens as proper subjects of medical charity.

We expect to see this adopted, as a mild protest by the members of the present staff would undoubtedly be followed by a score of applicants eager for positions upon the staff and ready and willing to render the services proposed. With the consolidation of the county and city governments which will follow soon, an extension of this principle will result in filling the medical inspectorships and the entire health department with unpaid officials from the staffs of the charitable institutions. Such a plan will enable the officials to point with pride to the record they are making in saving the people's money, and the profession will again furnish an object-lesson to the people, that medical services are practically worthless as marketable commodities.

THE AMENDMENT OF THE ILLINOIS ACT CONCERNING CORPORATIONS.

If the Legislature of Illinois had adjourned and passed nothing but the amendment of the act concerning corporations, it would have deserved the gratitude of all those interested in the improvement of medical education. Under the loose methods of incorporating institutions, diploma mills have been organized upon paper with imposing curricula and long lists of professors. The habitat of many of these institutions is found in the front rooms of small flats in our side streets. Many of these institutions have shown a wonderful degree-conferring power, and have included among their diplomas the degrees of M.D., LL.D., D.D.S.; in fact, it is probable that there is no degree known in ancient or modern times that could not be furnished by one of these institutions, providing one paid the fees and a moderate extra charge for engrossing the parchment.

The act concerning corporations is now so amended that it "provides that the Attorney-General may file a bill in chancery in the name of the People of the State against any corporation authorized to confer degrees, diplomas, or other certificate or certificates of qualification in the science of medicine, pharmacy, or dentistry, which conducts a fraudulent business, or abuses, misuses, or violates the terms of its charter, in any court having jurisdiction of the corporation and subject-matter of such bill, for an injunction to restrain said corporation from conducting its business fraudulently, or abusing, misusing, or violating the terms of its charter, and also for the dissolution of said corporation, and thereupon it shall be the duty of the court in which said bill is filed to grant such injunction and to hear and determine the same as in other cases in chancery."

THE NEW ILLINOIS MEDICAL PRACTICE ACT.

The new medical practice act for Illinois has been extensively commented upon by medical journals. It has generally met with approval. The part which has been subject to some criticism is that section which requires examinations of all graduates in medicine excepting those from legally chartered medical colleges in Illinois in good standing. It is felt by many outside of the State that to require an examination of alumni of the University of Pennsylvania and Harvard Medical College, and at the same time to admit those from the legally chartered medical institutions of Illinois, is in effect to legislate in favor of home production. That such a rule should be based wholly upon the merits of the case cannot for a moment be denied. The committee who urged the passage of the new act were a unit in the belief that a State examination was the most important part of a medical practice act, and that it should apply to all who applied for a license. As there was opposition on the part of certain medical schools now in the State, a clause was embodied permitting the State Board to recognize diplomas of local institutions. An examination of the law shows that this clause is permissive and not mandatory. Already the College of Physicians and Surgeons of Chicago has passed resolutions that it does not desire to have its diplomas recognized. It is expected that this action will soon be followed by similar resolutions by the majority of medical teaching institutions in Chicago. This view on the part of teaching faculties will undoubtedly lead the State Board of Health to throw out all diplomas, which they may do under the section in question, which reads: "Graduates of legally chartered medical colleges in Illinois, in good standing, as may be determined by the Board, *may* be granted certificates without examination."

THE BERTILLON CLASSIFICATION OF CAUSES OF DEATH.

The American Public Health Association has published the report of the special committee on demography and statistics, in which they recommend the Bertillon classification of the causes of death. An examination of the 162 titles of diseases, and the exceptions and instructions which go with the classification, shows how grave the difficulties are which have to be met in preparing a uniform scheme for vital statistics. Even a casual reading of this classification shows many apparent inconsistencies, but when taken as a whole it is difficult to see how it could have been improved upon. The most satisfactory thing about the classification is that

it does not attempt to direct a physician as to how he shall state the cause of death, but leaves it entirely within his own discretion, and the fuller he makes a diagnosis the easier it is to classify. The difficulties met with in compiling statistics of this kind are largely due to imperfect reporting.

The classification is recommended for adoption after the first revision, which is to be done in Paris in 1900. In the meantime the committee having the work in charge invite suggestions and criticisms that may be usefully employed in the final work of the committee. It is proposed to have a decennial revision, thus giving a uniform system of classification, making it possible to compare the mortality tables of one country with those of another, or what perhaps is of more importance still, a system which will permit of comparison of the same country or city over a period of several years.

THE INDEX MEDICUS.

Word reaches us at this time that with the close of the present volume the *Index Medicus* will no longer be published. The editor writes that this decision has been arrived at with some regret, but the continuous increase of the quantity of medical literature of late has led to such an increase in the expense of producing the *Index* that its publication must be suspended owing to the want of financial support. We are informed that this decision is final.

Nothing could exceed the regret with which we make the announcement, as the *Index Medicus* was one of the most useful publications in the whole range of periodical medical literature. We do not see how the great libraries of the world can afford to let this index be suspended. The amount of time and labor required in properly indexing the current medical literature of the world is something enormous, and it would seem that a little cooperation on the part of the libraries alone would have been sufficient to have continued this publication. The *Index* was a great saver of time and money to those who make use of periodical medical literature, and its loss will be felt most severely by those scientific workers who are least able to supply the loss occasioned by its suspension.

ABSTRACTS.

MEDICINE.

Antitoxin Treatment of Diphtheria in Chicago.—

The *Bureau of Vital Statistics for Chicago* of February 17, 1899, gives some interesting data regarding the value of the antitoxin treatment. The department has treated more than 4000 cases of true diphtheria with antitoxin, covering a period of forty-one consecutive months, with a mortality of 6.8 per cent; 418 cases treated within the last four months of this period give a mortality-rate of 4.8 per cent. During the three years that the antitoxin treatment has been instituted by the health department, there has been a decline of 43 per cent in the death-rate attributed to diphtheria and the various forms of croup.

The remarkably favorable results obtained by the department are attributed largely to the prompt administration of antitoxin where a clinical diagnosis of diphtheria was made. In all cases cultures from the throat are obtained as well as smears for microscopical study. Every case of "sore throat" that is visited is examined in this way, and only those which show the presence of the Klebs-Loeffler bacillus are included in the department statistics.

The importance of early treatment is shown by the varying mortality-rate in different periods of the disease. Of 4071 cases, those treated on the first day show a mortality-rate of 0.28 per cent, on the second day 1.67 per cent, on the third day 3.77 per cent, while on the fourth day the mortality had risen to 11.39 per cent, and after that day reached 25.37 per cent. A study of these figures shows that the third day seems to be a turning point in the mortality of the affection so far as it relates to the antitoxin treatment. Of 2882 cases treated with full doses of antitoxin on the third day, or earlier, there were seventy-five deaths, a mortality of 2.6 per cent. In 1189 cases treated on the fourth day and later, there were 201 deaths, a mortality-rate of 16.9 per cent. The home treatment is said by the department to furnish more favorable results than hospital treatment. We reproduce a diagram which deals with the number of deaths from diphtheria during the preantitoxin period and after the treatment was instituted.

Multiplying the figures of any given month in the upper line by 10 will give the total number of such deaths for the ten such months

JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
180
165
150
135
120
105
90
75
60
45
SCALE: EACH SPACE REFRESENTS AN INCREMENT OF 3 DEATHS.
1886-1895
1886-1895
1896-7-8
1896-7-8
156.2
112.4
116.4
95.1
89.6
78.5
64.5
86.6
108.0
165.9
179.4
169.0
96.0
74.0
67.3
57.0
53.6
53.6
53.1
48.0
70.6
85.6
91.6
93.0
(Drake)

of the preantitoxin period—1886–1895. Similarly multiplying the figures of any given month in the lower line by 3 will give the total number of such deaths for the three such months of the antitoxin period—1896–1898. Thus the average of all January deaths in the ten-year period was 156.2, and the total was 1562. The average of all January deaths in the three-year period was 96, and the total was 288.

The upper unbroken line shows the number of deaths from diphtheria and croup during the decennial period 1886–1895. The lower broken line shows the number of deaths and the average mortality by months during the three years 1896–1898, in which the antitoxin treatment had been vigorously exploited. The figures near the circles are those for the average number of deaths from diphtheria and all croup for the respective months.

Histology of Cancer.—

C. H. Frazier, in the *American Journal of the Medical Sciences* for May, 1899, gives a summary of the recent literature of this disease. He quotes the results of Plimmer's recent investigations of the histology and etiology of cancer. Plimmer believes that certain intercellular bodies play an important part in this disease. These bodies were found in 1130 of 1278 specimens examined. Of the specimens in which it was not found, sixty-three were densely fibrous and atrophic. Twenty-seven were so degenerated that with careful examination no stain could be made to affect the broken up and dead cells. These intercellular bodies are neither a part of the cell structure nor, as has been claimed, the result of degenerative changes, since they show none of the reactions of any known degeneration; they are not found in parts of cancer undergoing degeneration, but only in the actively growing parts; they are not to be found in any other tissue. They can and do multiply in cancer kept outside of the body, and can be grown outside of the body. They have been found so repeatedly that it has been possible to describe their morphology, their reactions to stains, their methods of division, and their location in the tissue, with great accuracy. These parasites are not found in all parts of cancer, but only in the periphery; nor do they occur in equal numbers in all cases. A very decided relation between the parasites and the malignancy of the growth has been found, for in the rapidly growing cancers they appear to be most numerous. The exact nature of these parasites has been disputed, but Plimmer believes they should be classed with the protozoa.

Sir James Paget says that cancer is a disease of degeneration, the frequency of which increases as age advances. Why this is so remains unexplained, as the cause of the disease remains unknown, and the wisest cannot say why the young escape whilst men and women in advanced life are afflicted in such numbers. The conditions of town life do not offer any explanation; although the records of death from cancer are exceptionally high in London, the records of many other large cities are proportionately low.

Mr. D'Arcy Power contributes some curious observations on the remarkable manner in which the disease is distributed. He states that it seems to cling to certain districts, buildings, and groups of buildings, irrespective of their size and age. The following is one of the cases which he reports: Miss B——, aged 45, housekeeper, lived in a certain house in a suburb of London for thirteen years, and died of cancer of the stomach in 1884. Miss T——, aged 47, who had lived in the house for twenty years, then became housekeeper and occupied the bedroom previously occupied by Miss B——. In October of the following year (1885) Miss T—— died of cancer of the liver. Mrs. J——, aged 67, who had lived in the house for ten years, succeeded to the place and bedroom occupied by Miss B—— and Miss T——; Mrs. J—— died of cancer of the breast and uterus in 1893. Each of these patients appeared to be in perfect health until they took one another's place as housekeeper. There was no blood relationship between them.

The Position of the Stomach.—

Transillumination of the stomach has been recommended by Einhorn; it has proved to be a serviceable method of diagnosis, but subject to considerable errors. Recently Henry Koplik, in the *New York Medical Journal* of May 6, 1899, devoted attention to this method in diagnosticating the form and position of the stomach in infancy. The system which he has devised for use in infants is, he thinks, an improvement upon that used by Hemmeter and Einhorn. In his apparatus the glasswork is fully protected from breakage by a metal cap, and in its general arrangements it resembles the ordinary cystoscope. It can be introduced without difficulty in very young infants, and, indeed, it is only in the latter that it is valuable, as after children are more than one year of age they become so unmanageable that the difficulties of introduction of the instrument are so great as to preclude its use unless an anesthetic is given, a proceeding that the writer does not regard as justifiable.

Georg Rosenfeld, in the *Centralblatt f. Innere Medicin*, states that

the normal position of the stomach is as follows: For two-thirds of its length from the cardiac orifice it runs nearly vertically downward with an inclination to the left. The last third passes in a more or less acute angle in front of the first lumbar vertebra, the pylorus lying immediately to its right side. When full, the greater curvature of the stomach is turned forward and to the left. Only a small portion of the stomach lies under the abdominal wall in the epigastrium.

Rosenfeld condemns all common methods of ascertaining the size of the stomach, which he says are subject to error. Of the gastrodiaphane, he says that the light radiates beyond the limits of the stomach, making the part occupied by the pylorus in the epigastrium much too large. He has devised a method which is substantially as follows: A tube is filled with coarse shot, which should weigh not less than 150 grammes. This is passed into the stomach, and its situation when moved about in the organ is determined by the fluoroscope.

The method seems to be quite accurate, but is evidently very difficult to apply, and therefore quite devoid of practical clinical application.

The Effervescence Test for Gastric Acidity.—

E. L. Benedict, in the *Buffalo Medical Journal* for June, 1899, says that the most important thing to be determined regarding the condition of the stomach is the presence or absence or excess of acid. There are many patients who cannot or will not permit the passage of the stomach-tube, and hence are denied the usual examination, carried out after the administration of a test breakfast and the withdrawal of the contents of the stomach. The effervescence test of the author is devised to meet the exigencies of these cases. It depends upon the production of audible sounds due to liberation of gases, when a saturated solution of sodium bicarbonate is mixed with an acid solution. He says that any one who doubts the possibility of producing audible effervescence within the stomach need only pour a saturated solution of bicarbonate of sodium into a glass containing a 0.02-per-cent solution of hydrochloric acid. The effervescence is heard at a distance of several feet from the ear. In practice the stethoscope is placed two inches to the right of the middle line and two inches above the umbilicus, as nearly as possible upon the exact level of the stomach contents as determined by percussion. The solution of bicarbonate of sodium is then swallowed, and in about ten seconds a squirting sound is heard, due to the pas-

sage of the liquid through the cardia. Care must be taken that the patient does not rustle the clothing, breathe noisily, or in any other way interfere with the delicacy of the test. If the stomach contents are decidedly acid, a fizzing sound is heard which lasts a few seconds. Practice is necessary to distinguish this effervescence from fine borborygmi occurring as the result of peristaltic waves. If no sounds are heard, the alkaline drink may be followed by a glass of hydrochloric acid of about normal gastric strength, which will produce effervescence. Obviously the method does not distinguish between kinds of acidity, nor is it quantitative. The author claims that with the test it is possible to make a distinction between marked subacidity or non-acidity, acidity nearly normal, and marked superacidity.

Argyria.—

M. Menzel, in the *Wiener Klinische Wochenschrift* of May 18, 1899, calls attention to the comparative rarity of staining of the skin by the silver salts, especially as they have been so largely discontinued in the treatment of internal disorders. He speaks of a patient who had been treated nine and one-half years in the throat clinic of v. Schrotter, for chronic pharyngitis and laryngitis. Local applications of from five- to ten-per-cent solutions of nitrate of silver were employed during that time, which was followed by a bluing of the entire skin. He mentions a number of other cases of a similar kind which have been reported in the literature and calls attention to the fact that the discoloration of the skin is more marked over those portions of the body which are exposed to the light. The chemical rays impinging upon the skin precipitate the soluble salt, which accounts for the increased coloration noted upon the exposed surfaces. Most authors agree that little can be done in the way of improvement in these conditions, but that exclusion of the silver from the alimentary tract or other source from which it is absorbed is followed after some years by a change for the better in the coloration.

We think that Menzel calls attention to what will prove of some importance in relation to the newer treatment of wound infection and other conditions by the prolonged application of the silver salt. The new combinations of silver with the albuminoids, which are becoming deservedly popular, need to be especially studied from this standpoint, as it is still a matter of question whether their prolonged use is followed by staining of the skin to the same degree as when the nitrate of silver is employed.

The Clinical Significance of Oxaluria.—

Robert F. Williams, in the *Maryland Medical Journal*, states that there is a paucity of literature upon this subject in recent text-books. He quotes Beneke as stating that oxaluria has its toxic cause in impeded metamorphosis in that stage of oxidation which changes oxalic acid into carbolic acid; that the chief source of oxalic acid is in the nitrogenous foods; that retardation of their metamorphosis may be caused by such conditions as the following: excess of nitrogenous food, excess of starches and sugars, conditions diminishing oxidation by interfering with the proper function of respiration and circulation, depressed nervous conditions.

The author claims to have found two other sources than the derangement of metabolism according to Beneke, namely, the ingestion of calcium oxalate in the food, and its production by certain bacteria in the intestines. He devises the theory that calcium oxalate is changed in an alkaline solution and exists in the intestines in the form of crystals; therefore it must be absorbed in the intestines in the crystalline state, and circulate in the blood as such. Eliminated by the kidneys, it acts as a mechanical irritant which leads to the production of albumin and casts. The symptoms of an acute oxaluria, he says, closely resemble those of beginning nephritis. If the condition is not checked, it leads to chronic changes in the parenchyma of the organ, leading to the production of a chronic Bright's disease.

The Clinical Examination of Hemic Leucocytosis.—

In the London letter of the *Medical Record* of May 27, 1899, A. B. Phear is said to have presented a preliminary paper to the Medico-Chirurgical Society in which he contended for the superiority of fluid preparations of blood over the common cover-slip. The latter, he claimed, flattened and distorted some of the leucocytes, while others are washed away with the stain or obscured by the red corpuscles. In fluid preparations the white cells are fixed and preserved approximately as spherical bodies. They are not distorted, and drawings and measurements can be relied on. Thickness of the non-flattened cells does not matter, as by gradually focusing from above downward through the cell views are obtained at different focal planes which are equal to a series of sections. A 0.2-per-cent solution of methylene blue in 40-per-cent alcohol is used for diluting the blood; a small quantity being added to a drop of blood on a glass slide and mixed by a current of air blown through a pipette spreads the blood in a film. A cover-glass is then

put on and the edges smeared with vaselin to prevent evaporation. The procedure takes about three minutes, and the preparation can be examined at leisure with an immersion lens and is available for a differential count of the individual cells. By this method a group of cells can be differentiated, large oval in outline, which finds no place in usual classifications.

A Case of Beriberi.—

H. T. Patrick, in the *Chicago Medical Recorder* for May, 1899, reports what he regards as a case of this disorder which was observed by him in Chicago. The patient landed in Manila in August, 1898, and the first of September was attacked with the disease. While the reporter believes that the disorder should be classed as that peculiar form of febrile neuritis called beriberi, it presented some anomalous features. He was unable to learn of the onset of this disorder being as sudden as that observed in his patient. The young man was a member of the hospital corps in the regular army, and was carrying a tray, when he suddenly dropped. At the time he thought some one had struck his knees from under him. He worked for the remainder of the day, but felt weak and had to sit down and rest frequently. The next morning he could not rise at all, and he complained of very severe pains in the legs. The legs swelled to the knees and the left hand to the wrist. The swelling was not accompanied by redness and did not come on until about ten days after the onset of the malady. A point of interest was the peculiar deformity of the feet, which did not present the typical foot-drop of ordinary neuritis, but a pure varus. There was a considerable ankylosis and a good deal of involvement of the ankle-joints, which were swollen and very tender.

Treatment of Typhoid Fever.—

Stuart, in the *Montreal Medical Journal* for February, 1899, has an excellent summary on the treatment of this disease. He refers to the fact that serum-therapy is yet in its infancy, and while the work that has been done upon animals in typhoid infection is gratifying and points to a probable solution, up to the present the application of this method in the human subject has been disappointing. He condemns the eliminative and antiseptic treatments, as also the use of antipyretics, in this affection.

The statistical results of a large series of cases in different parts of the world show that the average mortality of cases treated by the Brand bath are almost exactly alike, varying only from 7.3 to 7.84

per cent. The results obtained in the Royal Victoria Hospital in Montreal since its opening in 1894 have been still more favorable. Out of 408 cases treated, the mortality was eighteen, or 4.4 per cent. Perforation and hemorrhage was accountable for one-half of the cases, complications which he thinks are directly favored by the cold bath. Relapses are not more frequent where this treatment is employed than with other methods. In 325 cases whose histories were studied with especial reference to this point, relapses occurred in eight per cent.

Acute Diffuse Peritonitis Due to the Gonococcus.—

H. W. Cushing, in the *Johns Hopkins Hospital Bulletin* for May, 1899, discusses and negatives Bumm's original assertion that gonorrheal process remains limited to the surfaces lined by mucous membrane. It is now distinctly shown that joints, the pleura, and pericardium or endocardium are liable to inflammation due to the development of the germ, although it has been claimed by some writers that where inflammation of these structures existed, it was always associated with other infection. The author reports two cases in which bacteriological examination showed conclusively that a general peritonitis may be caused by the gonococcus alone. His cases also show that there may be an extension of the gonorrheal infection from the genital organs to the peritoneum, accompanying menstruation or the puerperal state; that the peritoneum has no more marked power of resistance to this specific infection than has the pericardium or endocardium, but as it is more exposed to the infection in women it is more frequently involved. The disorder pursues a relatively benign course, and often escapes recognition by the physician.

Temporary Glycosuria in Cerebral Hemorrhage.—

R. B. H. Gradwohl reports in the *Philadelphia Medical Journal* a case of a man 46 years old who suffered from a cerebral hemorrhage due to the rupture of the lenticulostriate artery. The entire ventricular system was flooded with blood. The urine, which was drawn immediately after his admission to the hospital, contained three per cent of sugar. All tests for diabetic blood advanced by Bremer were employed, but reactions were negative. From this it is argued that the patient was not diabetic. The temporary glycosuria is attributed by the writer to pressure upon "Bernard's diabetic center." He thinks that the presence or absence of sugar may have some diagnostic significance in differentiating uremia and other forms of coma from cerebral hemorrhage.

Leucocytosis Associated with Convulsions.—

Fred Grant Burrows, in the *American Journal of the Medical Sciences* for May, 1899, gives an extended study of leucocytosis associated with convulsions. He shows that leucocytosis is associated with convulsions not only in paralysis, but in other diseases as well, and that the leucocytosis bears a relation to the severity of the seizures. He further shows that this leucocytosis is in part due to the muscular work during a convulsion; but this part is of short duration, and is superimposed upon a pathological leucocytosis of longer duration which was evidently associated with the underlying states that led to the convulsive seizures. The cases examined include senile dementia, senile confusion, terminal dementia, general paralysis, katatonia, and puerperal eclampsia. It is to be regretted that the author did not have for comparison a typical case of hysterical convulsion.

Atrophy of the Optic Nerve Following Hemorrhage.—

Samuel Theobald, in the *Johns Hopkins Hospital Bulletin* for May, 1899, says that sudden blindness in posthemorrhagic anemia is almost always due to thrombosis of the central retinal artery. The cause of this he attributes to the resistance offered to the enfeebled blood-current in the central retinal artery by intra-ocular tension. In exceptional cases the thrombosis may occur in the central vein of the retina. In rare cases the loss of sight may be due to hemorrhagic or serous effusion in the sheath of the optic nerve.

SURGERY.

An Operation for Gastroptosis.—

Alfred Stengel and Henry D. Beyea, in the *American Journal of the Medical Sciences* for June, 1899, describe a case of Glenard's disease in which there was a downward displacement of the stomach, intestines, and kidney. The patient was a young unmarried woman, with no previous history of traumatism or of any abdominal extension. At first the kidney was anchored in its normal position, which was followed by an improvement in the symptoms referable to that organ, but distinctly gastric symptoms continued, notwithstanding the long rest and careful diet. The position of the stomach before the operation is shown by a diagram in which the upper border is not more than an inch or two above the umbilicus, and the lower border is at least three or four inches below that point. That there

was considerable alteration in the position of the organ is shown by a diagram which is made from an examination just before the operation, in which the same relative position of the lower and upper border in reference to the umbilicus is maintained, but there is an enormous extension of the greater curvature upward and to the left.

At the operation a four-inch incision was made in the middle line and the peritoneal cavity opened; the gastrohepatic omentum was exposed and shortened by the introduction of sutures in such a way as to lift the stomach into a more nearly normal position. The operation lasted forty minutes, and was followed by an uninterrupted recovery, an improvement in the gastric symptoms, and a gain of ten pounds in weight. Seven months after the operation the stomach was inflated with air and its position outlined. This showed that it was well supported in nearly its normal position, the lower border not reaching more than an inch and a half below the umbilicus. A year after operation the same examination showed that there had been no displacement of the stomach, and there was a very marked improvement in the general health.

"Catheter Fever."—

A. M. Forbes, in the *Montreal Medical Journal* for May, 1899, speaks of the strange death which is occasionally noted after the passage of a catheter or a sound. He regards these cases as simply graver forms of that condition which is followed by chills and other symptoms after urethral instrumentation. He has made it a practice to question every patient about forty-eight hours after using a sound, and in this way has accumulated considerable experience in avoiding accidents in the use of instruments in the urethra. He thinks that sepsis and nervous conditions determine the production of catheter fever, and that neither alone will account for all the conditions noted in these cases. He regards the following as absolutely necessary in the prevention of these complications:

"Never use an instrument until the urine has been rendered apparently sterile by the use of such agents as salol, boracic acid, or, perhaps best, urotropin. Always be sure that instruments are absolutely sterile, for, although we know of many instrumentations with sounds simply washed in hot water and perhaps rubbed down with a sterile cloth, often without the slightest ill effects, we must confess that it is preferable to use none but boiled instruments. Never pass a sound into the bladder if the stricture is in the anterior urethra alone, as the passage into the bladder certainly increases the danger of septic absorption."

The Surgical Treatment of Dropsy.—

The difficulty of evacuating fluid from the cellular tissue of dropsical patients is very considerable. Simple incision has long been employed for that purpose, but the danger of infection is very great. The dropsical fluid forms an excellent culture medium, and the infection once beneath the skin and well distributed into the cellular tissue breeds very rapidly and not infrequently ends fatally. An aid to this process is furnished by the weakened resistance of the patient and by tissues that have long been distended by dropsical accumulation.

Recently, Borgherini (*Deutsche Arch. für Klin. Med.*, Bd. 61) has devised a plan based upon an old method, but one which seems to meet surgical indications in these cases. The dropsical limb is first made surgically clean, being scrubbed with soap and water, then with alcohol, then with an antiseptic. After this, four incisions are made — two in the calf and one over each malleolus. Over this an aseptic gauze dressing is applied, and it is all held loosely in place by a sterilized rubber bandage. The rubber bandage is left open at the heel, from which the water drains into a basin, the patient sitting on the edge of the bed or in a chair with the feet down. The dressings are changed each twenty-four hours.

Asterol, a New Soluble Mercurial Salt, as an Antiseptic.—

F. Stennmann, in the *Berliner Klinische Wochenschrift* of March 13, 1899, states that this substance is a soluble sulpho-carbolate of mercury, which contains 17 per cent of the metal, and is hence about one-fourth the strength of corrosive sublimate. He finds that it has some distinct advantages over the sublimate as a local antiseptic. Like the latter salt, it is soluble in water, its solutions remaining clear. Unlike the sublimate, it is not precipitated by albuminous fluids and hence its bactericidal properties are not lost in contact with these media. Its antiseptic power is enormously increased by the fact that it is not precipitated by albumin, and consequently it has a deep penetrating action. It is a useful substance for disinfecting the field of operation, as well as the hands of the operator, and it does not attack instruments. When absorbed, it is quite as toxic as the other mercurial compounds.

Edema of the Glottis During Anesthesia.—

F. R. England (*Montreal Medical Journal*, May, 1899) describes a case in which the patient died during anesthesia while an operation was being performed for the opening of an abscess in the neck.

In the early stages of the anesthesia pus was noted to be flowing from the mouth, the patient became cyanotic, and respiration ceased. Tracheotomy was rapidly performed and artificial respiration instituted, but death followed almost immediately. The author thinks that the case teaches the importance of early operations in deep-seated abscess of the neck, also the danger involved in the administration of general anesthetics when operation has been too long delayed.

Anterior Axillary Incision in Amputation of the Breast.—

E. J. Senn, in the *Journal of the American Medical Association* of May 27, 1899, recommends in extirpation of the breast with removal of the axillary contents that the incision be not carried into the axillary space, but upon the anterior surface of the shoulder, as shown in Fig. 1.

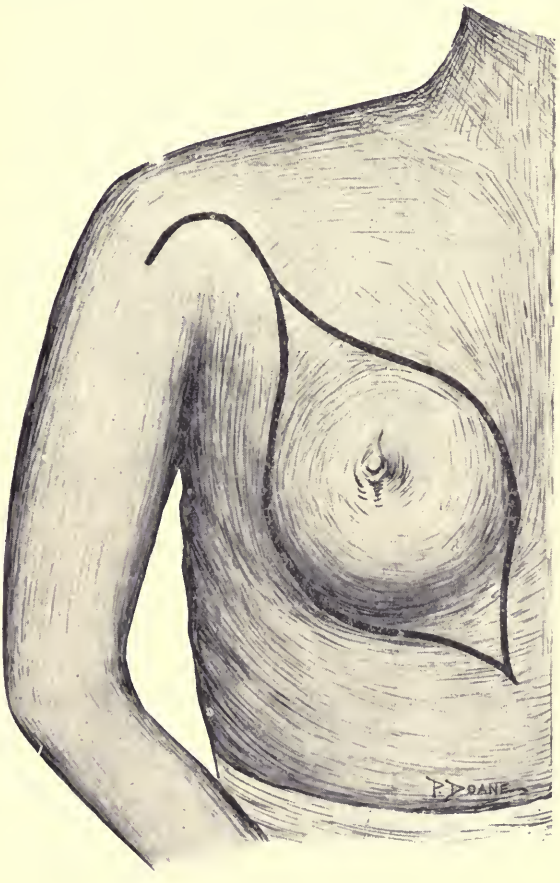


FIG. 1.

The incision begins below, near the sternum, then divides, encircling the breast, extending upward and outward, to again unite over the pectoralis muscle and be continued across the shoulder in a curved line with the concavity downward.

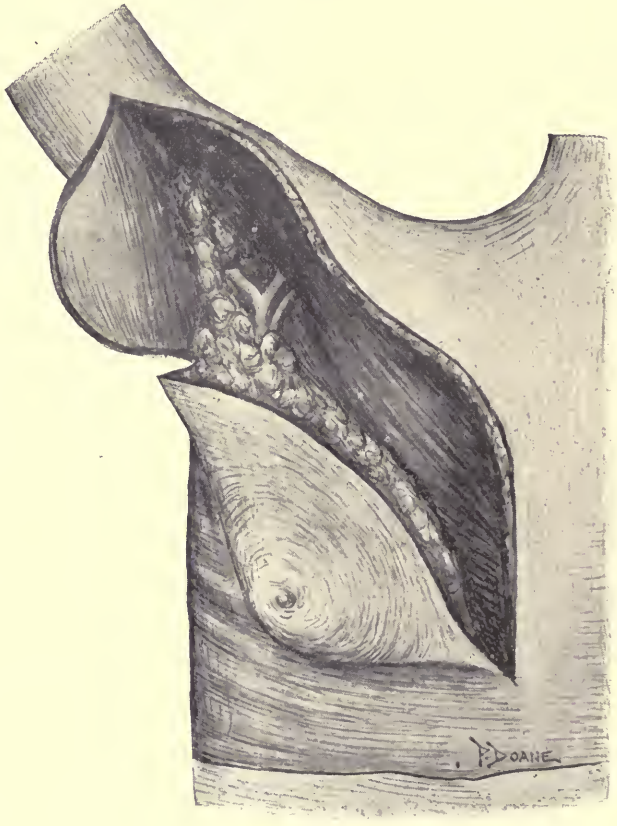


FIG. 2.

Fig. 2 shows a further step in the enucleation of the breast. The gland is still attached by its vessels and lymphatics to the structures which pass into the axilla.

Fig. 3 shows the line of incision after it is closed by sutures. The author claims for the incision a larger field, permitting of a more perfect dissection of the axillary space than is obtained by the ordinary axillary incision. Traction on the axillary flap easily frees it from the subcutaneous tissues, and with a few strokes of the knife the axillary vein is exposed. The liability of injury to this structure is greatly lessened, as the muscular landmarks are thoroughly

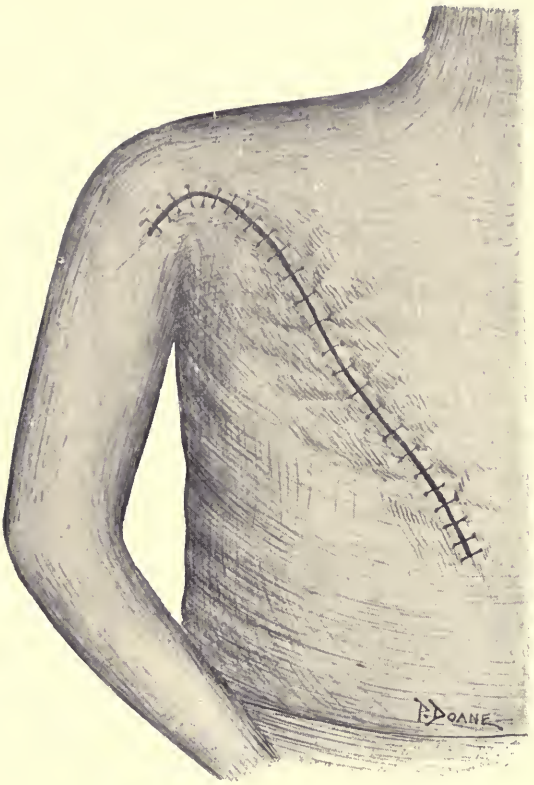


FIG. 3.

exposed by the incision. In case firm union is not secured in the axilla, it affords easy access for the treatment of fistula or abscess. The incision is so situated that it does not impede free motion of the arm.

THERAPEUTICS.

Erythrol Tetranitrate in Angina Pectoris.—

The value of a vasodilator in this disorder, and in other conditions attended by a feeble heart's action, is unquestioned. Amyl nitrite and nitroglycerin are prompt and vigorous vasodilators, but they act very quickly, and their favorable action disappears with equal rapidity, after which the dose must be repeated. Consequently the discovery of an efficient vasodilator having a prolonged action is of great importance. It is claimed that such has been found in

erythrol tetranitrate. This substance is found in large scales, soluble in alcohol, insoluble in water. It is stated that the scales explode readily on percussion, therefore it must be given in the form of an alcoholic solution 1 to 60, but tablets have been made containing one-half grain which are said to be free from this danger.

Boughton Addy, in the *British Medical Journal* of May 6, 1899, reports the case of a man, 52 years of age, who suffered from heart trouble. In the course of these attacks he developed angina pectoris, which was relieved by the use of amyl nitrite and nitroglycerin; but the latter soon lost its effect, and its administration was attended by severe headaches. Erythrol tetranitrate was substituted in tablets of one-ninth grain each, two or three times a day. This produced a cessation of the attacks, the administration of the remedy being attended by the same vasodilator effect noted in the use of the nitrites and glonoin, but the action was much more sustained.

Treatment of Inoperable Cancer.—

C. H. Frazier, in the *American Journal of the Medical Sciences* for May, 1899, gives a critical summary of the recent literature of cancer. He states that of all the methods that have been suggested in the treatment of inoperable cancer, but one has had sufficient trial to warrant its recognition. The mixed toxins of erysipelas and bacillus prodigiosus have been employed by Coley in 148 cases, and by others in thirty-five cases. Of the 148 cases, the treatment was successful in twenty-four, or 15 per cent; of the thirty-five cases, twenty-six disappeared completely, and two others decreased so much that only an insignificant node was left. The results, the writer thinks, are sufficient to warrant this form of treatment being pursued in the strictly inoperable cases. Unfortunately but little success has been obtained in its application to cancer proper; by this we understand that the writer means the carcinomata. The best results are reported in cases of spindle-cell sarcoma. The toxins have been used for some time after operation with some promise of success as a prophylactic measure. The treatment at least rests on a logical and scientific basis.

Novel Method for Removing Tapeworm.—

J. W. Kline, in the *Iowa Medical Journal* for April, 1899, describes a novel method of dealing with a tapeworm. In the removal of these parasites it not infrequently happens that several feet of the worm is passed and protrudes from the anus, while the

upper portion of the worm with the head remains in the intestine. As the tapeworm has a pair of longitudinal vessels extending from the head throughout its length along the two sides, it occurred to him that in these cases of partial expulsion, and which almost always result in failure, the worm could be very conveniently killed. He accordingly administered to the worm a hypodermic injection of morphine of one-half grain, followed in a few minutes by a copious injection of water; the remainder of the worm was passed with the upper portion dead. Before administering the morphine, he had severed the lower twelve feet of the worm with scissors. This portion retained its motion for an hour after the upper part, which had been treated with the morphine, was passed, while the upper segment had no motion after its expulsion from the intestine, showing that the morphine had killed it. The author believes that an injection of the worm is one of the most efficient means of dealing with them; in partially expelled worms where the connection between the extruded part and the head is still intact, the entire worm is easily killed by this method.

Protargol in Gonorrhea.—

Mark Ryan, in the *Therapist* of April 15, 1899, claims that of all the new remedies in the treatment of this affection, none have been successful in his hands excepting protargol. This salt contains eight per cent of silver combined with an organic base. It is soluble in warm and cold water, but some time must elapse in preparing the solution. If shaken in a bottle or rubbed in a mortar a froth forms upon the liquid, which contains a considerable quantity of the drug. He generally uses a one-per-cent solution, and has had better results in chronic than in acute cases. He does not advise its administration during the first fortnight, but after that two injections daily may be used. Care should be taken to cleanse the urethra with warm water, so as to bring the substance in direct contact with the mucous membrane. The injection should be retained as long as possible, though he thinks that the half-hour recommended in the books is more than the average patient will tolerate, and he does not think that it is necessary. In three cases he has used soluble bougies containing one per cent of the drug prepared with cacao butter.

Arsenic as a Corrigent in Thyroid Medication.—

Leon Mabille, in *Lyon Médical* of April 29, 1899, calls attention to the corrective effect of arsenic in thyroid treatment. It is well

known that the administration of thyroids is sometimes accompanied by disturbances of the heart's action, local sweating, and headache. In some cases the idiosyncrasy is so great that it is difficult to give the thyroid in sufficiently large quantities to produce its therapeutic effects. To some extent this has been met by the use of thyroiodine, and if one is safe in drawing conclusions from the few cases so far reported, thyroiodine has all of the therapeutic value of desiccated thyroids, without some of the untoward effects of the latter preparation. Thyroiodine, however, is a somewhat expensive preparation, which precludes its extended use among the poor. If the assertion of Mabille that Fowler's solution corrects the untoward effects of thyroid medication is supported by further experience, it is an observation of considerable importance in the treatment of myxedema and allied conditions.

Euquinine as a Substitute for Quinine.—

William Summerskill, in the *Therapist* of April 15, 1899, claims that in euquinine we have an admirable substitute for quinine, it being particularly indicated in those who have an idiosyncrasy and who suffer from headache, fulness of the head, and slight deafness after the administration of quinine. Euquinine is ethyl-ether of quinine-carbonic acid. It is a white crystalline powder, only slightly soluble in water, but dissolves readily in alcohol, ether, and chloroform.

The Treatment of Falling of the Hair by Simple Irritation.—

Jacquet, in *La Presse Médicale* for December, 1898, says that irritation is the basis of all treatment of alopecia. Mechanical irritation he regards as quite as efficient as chemical. For this purpose he uses a stiff brush, with which the affected area is vigorously irritated, the effect being carried to a point just sufficient to produce simple hyperemia, but without inflammation or exudation. The applications should be made from four to six times a day.

Eucaine B as a Local Anesthetic.—

Heinze, in the *Arch. für Path. Anat. und Phys.*, 1898, Band 153, has made a careful comparative study of the different solutions used for local anesthesia. He excludes the substances employed in the preparation of these solutions from taking any active part in the production of the anesthesia. Eucaine B he says is a very much less toxic substance than cocaine, while it is quite as efficient as a local anesthetic. Its solutions are absolutely unirritating and may

be sterilized by heat without detriment to the anesthetic power. One great difficulty that has attended the use of cocaine in local anesthesia has been the impossibility of sterilizing the solution, the application of heat destroying the anesthetic powers of the drug. Eucaine B should be preferred to the former drug in the preparation of solutions for infiltration anesthesia. Eucaine B is not devoid of toxic properties, but it is very much less poisonous than cocaine.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Myomectomy During Pregnancy.—

A. L. Smith, in the *Montreal Medical Journal* for May, 1899, reports a successful operation for the removal of a fibroid tumor from the pregnant uterus. The patient began to menstruate at the age of 12, her periods being always painful and scanty. She was married at the age of 24 and became pregnant fifteen days later, but miscarried at seven weeks. After this miscarriage she felt a lump in her right side, which at that time did not trouble her. She became pregnant again on January 12, 1898, and almost immediately afterward the lump began to pain, and by the time she was two months pregnant she could hardly bear it. The tumor could now be seen and felt projecting under the thin abdominal wall. She sent for Dr. Macnamara, who diagnosed a fibroid tumor with pregnancy, and during two months he tried to relieve her pain with medicine, but at the end of that time became convinced that something more radical would have to be done. Myomectomy was determined on, she then being two and a half months pregnant. The abdomen was opened by a long incision, the tumor was grasped and drawn out, and as it was evident that a good deal of sewing would be needed the pregnant uterus was brought out of the abdomen and laid on a sterile towel. The uterus appeared exceedingly vascular, so two pairs of clamps were placed on the uterine wall at the base of the tumor. The latter was then excised so as to form a sort of V-shaped stump, the large vessels of which were controlled by the clamps while sewing the flaps firmly together with interrupted sutures. So far, hardly a drachm of blood had been lost, but when one of the clamps was cautiously loosened for a moment the bleeding was furious. It was tightened again, and a second row of medium silk sutures put in, turning in the peritoneal surfaces. Again the clamps were loosened, followed by bleeding, but less in quantity, so that

with a third row of very fine stitches, passed with a fine needle, the wound was made quite dry. The uterus was then replaced and the incision closed with through-and-through silkworm-gut stitches. The after-treatment was uneventful, and a month later the patient was walking about.

Diagnosis of Cerebral Abscess in Children.—

The frequency of internal ear troubles in children, and the difficulty of diagnosis, makes the record, which was recently reported by L. J. Hammond (*Annals of Gynecology and Pediatrics*, May, 1899), of four correct diagnoses out of five a creditable one. He states that any of the accessory cavities of the brain may contribute to the formation of an abscess of the encephalon, but the portion most frequently involved is the cerebrum. The period in which it is most to be expected is in beginning dentition and in the early years of childhood, when there is a special liability to the exanthematous diseases. Traumatism is a frequent cause; many times, when apparently trifling, it may lead to deep-seated disease. The same pathologic conditions leading to cerebellar abscess in children, in adults cause disease of the cerebrum or extradural disorder. These differences are explained by the fact that the outer table of the skull in children is less dense, which permits of early rupture and spontaneous evacuation of the pus. In the five cases that had come under Hammond's observation, there had been during this same period three cases of cerebral abscess in adults from the same infection atrium. It is obvious, therefore, from the frequency of its occurrence and its great fatality, that a definite symptomatology should be recognized, in order that early operative intervention may be instituted. The symptoms that have been universally present are: discrepancy between the temperature and pulse, the former being often subnormal, while the latter ranges from 120 to 160; flexion of the extremities; dilatation of the pupils; uncontrollable restlessness, with a half-unconscious condition; peculiar indisposition on the part of the patient to obey requests; sugar in the urine; slow respiration; swinging of arms and inclining head toward one side; and absence of paralysis.

Transplantation of an Ovary.—

James H. Glass, in the *Medical News* of April 29, 1899, reports the interesting case of a young woman who two years before had a double ovariotomy performed. This was followed by a most distressing train of symptoms — insomnia, vertigo, pelvic pains, and

other conditions which characterize the artificial menopause. All treatment proved unavailing, and as there was a marked retroflexion, it was determined to make an operation for a ventrofixation. At the same time another patient, who had marked deformity of the pelvis which had necessitated an ovariotomy, was operated upon to produce an artificial sterility. With the full consent of both patients the healthy ovary was removed from the woman with the deformed pelvis and transplanted beneath the peritoneum of the woman who had sustained the double ovariotomy. Recovery was rapid and uneventful, and was followed by a rapid disappearance of all the nervous symptoms which had attended the artificial menopause. Menstruation, which had disappeared for nearly two years, returned, and after two or three months the function was reestablished with regularity.

[The complete reestablishment of menstruation after it had ceased, due to removal of both ovaries, is a remarkable circumstance. That this was apparently due to the transplanted ovary seems quite certain, yet numerous cases have been reported in which both ovaries have been removed, but menstruation did not cease. An improvement in the general health might account for a restoration of function, even in cases where an artificial menopause had been established. The case is of sufficient importance to lead to careful experimental study of the value of ovarian transplantation.]

Myxomatous Degeneration of the Ovary.—

M. A. D. Jones contributes to the *Medical Record* of May 6, 1899, an article on the myxomatous degeneration of the ovary, which she claims is a hitherto unrecognized pathological process in the ovaries. She has made a careful microscopic examination of over 100 ovaries, in which she found five or six marked cases of myxomatous degeneration. An ovary so affected is frequently the seat of inflammation, which process adds certain secondary products, such as a new formation of blood-vessels and a migration of leucocytes, to the degenerated tissues. She regards the degeneration as essentially a progressive destruction, and reports several cases of confirmed invalids who presented enlarged, softened, doughy, and extremely sensitive ovaries. She is of the opinion that ovaries of this kind should be immediately removed, as that is the only means of restoring the general condition of the patient. She does not believe that ovariotomy should be performed in any nervous trouble or constitutional condition, but only for disease of the organs themselves —disease that is destructive to health, comfort, usefulness, and is a threatened danger to life.

Caesarian Section in Pelvic Tumors.—

J. W. Williams, in the *North Carolina Medical Journal* of May 20, 1899, gives an account of a case in which a tumor was found occluding the pelvis to such a degree that it was thought a normal delivery could not be accomplished. The diagnosis was made a considerable time before the termination of pregnancy, and consequently considerable leisure was afforded the operator in determining what should be done. He discussed in relation to this case various procedures, such as tapping the tumor and the induction of premature labor. He finally decided that Cæsarian section was the preferable procedure, with at the same time an operation upon the tumor, which proved to be a parovarian cyst. The operation lasted fifty-five minutes, and was followed by an uninterrupted recovery, the after-conditions not being very different from what they are after normal labor.

FORENSIC MEDICINE.

The Detection of Cocaine in the Urine.—

Stephen Lett, in the *Quarterly Journal of Inebriety* for April, 1899, describes a method which he has devised which will detect this alkaloid in the urine of those who use the drug. Ten or twenty ounces of urine is taken, to which is added potassium or sodium carbonate until the mixture is alkaline. It is allowed to stand for half an hour and then filtered. The filtrate is agitated with two ounces of pure sulphuric ether. The ether is withdrawn, and to it is added one drachm of dilute hydrochloric acid of a strength of ten minims to the ounce. This is shaken with the ether and placed in an open dish, from which the ether evaporates spontaneously, a gentle heat being applied to obtain a perfect solution of any alkaloid on the surface or adhering to the sides of the dish. The remaining liquid may now be tested for cocaine.

A solution of terchloride of gold is made by dissolving ten grains of the terchloride in one ounce of water. This added to the ethereal extract will give, if cocaine be present, a yellow or yellowish-white precipitate. The precipitate is dissolved by heat in the presence of a little free acid. Upon boiling, the vapor given off has the odor of benzoic acid. The author states that if benzoic acid is present, it can only come from the presence of cocaine.

The test by Myer's reagent is as follows: To a portion of the residue left from the ether evaporation add a few drops of this test

reagent; a white precipitate will at once be formed if cocaine is present, which dissolves by heat, and upon cooling throws down yellow crystals, which under the microscope (⅙ objective) appear

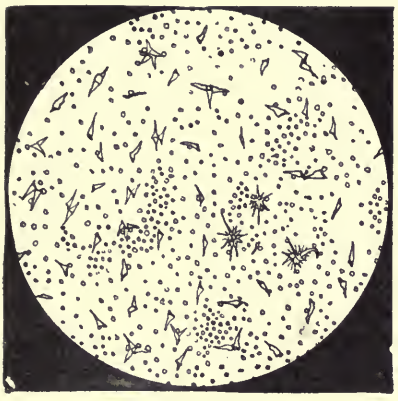


FIG. 1.

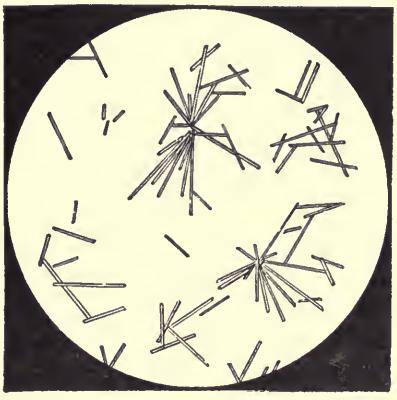


FIG. 2.

as depicted in Fig. 1. If there is an excess of the precipitate the undissolved portion will fuse into yellow gummy masses upon boiling. In following out the test with Myer's reagent, should the patient be taking quinine, it will first be necessary to precipitate this alkaloid from the solution to be tested by picric acid in excess, filter, and make the test with the filtrate thus obtained. The limit of Myer's reagent appears to be about one part of cocaine in 30,000 of water.

The following is an example of detection, both morphine and cocaine, in a double addiction: The patient at the time was taking fifteen grains morphine sulphate and four grains cocaine hydrochlorate every twenty-four hours. Eight ounces of the urine was used. This was concentrated over a water-bath to two ounces and allowed to stand twelve hours. It was then filtered, the filtrate rendered alkaline by potassium carbonate, thoroughly agitated and allowed to stand for twenty hours, and then filtered. This filtrate was treated as above directed for the extraction of cocaine, and tested by Myer's reagent. It gave satisfactory results, forming small round crystals, as shown in Fig. 1. The large crystals seen in this figure were not obtained, as the solution was too weak. The precipitate left on the filter was treated for the extraction of morphine and yielded unmistakable reactions. Upon permitting a few drops of the residue left from the alcoholic extract in the presence of a small amount of dilute sulphuric acid to evaporate spontaneously on a glass slide, the beautiful large crystals of morphine sulphate seen in Fig. 2 were obtained.

The Replevin of a Human Corpse.—

The Supreme Court of Michigan (*Journal of the American Medical Association*, May 20, 1899) has recently decided the case of Keyes *vs.* Konkel, in which it was sought to replevin the body of the plaintiff's brother. The deceased died at a hospital, and the defendants, who were undertakers, took charge of the corpse by request of the hospital authorities. The plaintiff, after the defendants had fitted the body for burial, demanded possession of the remains, which the defendants refused to deliver unless paid for their services. Thus was raised the question of whether replevin will lie for a human corpse. The Michigan statute provides for the proceeding of replevin in the justice court, and requires an affidavit by the plaintiff, setting forth that his "personal goods and chattels" have been unlawfully taken or have been unlawfully detained. The replevin statutes provide for a judgment for the defendant, when the plaintiff fails in his case, for a return of the property or its value. It is apparent, says the Supreme Court, that no return of the property can be ordered in case of the replevin of a dead body, and it is equally true that its value in money can neither be appraised nor ascertained by a jury. It was formerly held in England that there can be no property in a human body. In certain American cases a dead body has been said to be quasi-property, and the right to control and bury it and to recover against those who mutilate the corpse has been maintained. Recovery for the refusal of the right to bury, or for mutilation of the body, is rather based upon the infringement of a right than the notion that the property of the plaintiff has been interfered with. The recovery in such cases is not for the damage to the corpse as property, but damage to the next of kin by infringement of his right to have the body delivered to him for burial. In numerous cases equity has taken jurisdiction to prevent interference with the control of the dead body by persons entitled to control it. It was not contended that the defendants were entitled to maintain a lien, hence a return cannot be adjudged, and a replevin cannot be maintained.

A Malpractice Suit Involving Some Unusual Features.—

The *Pacific Medical Journal* in a recent editorial describes a case of a suit brought against Henry Kreutzman, of San Francisco, which was tried twice. In the first trial the jury disagreed, and in the second they gave a verdict in favor of the physician. The plaintiff applied March 9, 1897, to the physician, with the statement that there was something in her abdomen. Examination showed a

tumor the size of an infant's head situated to the right of the middle line and reaching above the brim of the pelvis. It was round and smooth, but without distinct fluctuation. The following day the patient was anesthetized with the aid of an assistant, and a careful bimanual examination made, which revealed a cystic tumor of the right ovary. It was intended to perform the operation on the following day, but the patient was not seen for about five months, when she applied to the physician to have the tumor removed. She entered the hospital, and on the day before the operation an examination was made which seemed to confirm the diagnosis made under the anesthesia, five months before. Before the operation it was agreed that the diseased ovary should be removed. Immediately before the operation the tumor was seen and felt on the outside. Incision exposed what proved to be the enlarged and softened uterus. At the time of operation nothing was done, because pregnancy could not be excluded. Two explanations are given—either that a diagnostic error was made at the first examination, or that an ovarian cyst was present at that time which had entirely disappeared at the time of operation and had been replaced by a soft fibroid, which had developed in the few months intervening between the first examination and the operation, this tumor having been mistaken for the original cystic growth.

The Payment of the Consultation Fee.—

The *Chicago Medical Recorder* for May, 1899, reports a case that was recently decided in Tacoma in McKone *vs.* Cole, it being an action at law to collect a consultation fee of $20. The defense was that the plaintiff never employed Dr. McKone, but that the latter was called in, without consulting him, by his family physician, Dr. Stratton, who was attending him for an attack of appendicitis at the time, and for this reason the attending physician was responsible for the bill. The court held that in serious cases a patient is not competent to judge of his own condition, and that the attending physician need not always inform the patient of his intention to call counsel, as the excitement pending such a consultation might be prejudicial to the patient's chances of recovery. A verdict was entered for the plaintiff.

An Autopsy Not a Mutilation.—

Judge Audenreid has recently decided that the holding of an autopsy is not a mutilation of a body. The Judge in his opinion conceded that the mutilation of a body when authorized by hospital

authorities was an outrage, but that the holding of an autopsy did not constitute a mutilation. The *Philadelphia Medical Journal* of May 20, 1899, in commenting upon the decision, says an autopsy, of course, as any rational man might know, can only be performed by making incisions into the body. If the brain is to be examined the skullcap must be sawed off, and if the thoracic and abdominal organs are to be inspected an incision must be made from the throat down. Such incisions properly done on a dead body do not constitute a mutilation, and even though they are done without consent (which is by no means advised or advocated) they should not, and according to Judge Audenreid do not, constitute grounds for mulcting a hospital. To mutilate means to maim or to cripple, and a corpse cannot very well be maimed or crippled. Such a use of words is a great abuse of rhetoric, just as the payment of damages in such a case is, according to Judge Audenreid, an abuse of money.

Rules to be Followed in Hypnotism.—

John R. Rose (*Journal of the American Medical Association*, May 20, 1899) gives the four rules formulated by Bernheim and Beaunis, which should always guide one in the application of hypnotism to the treatment of all disease. Never use hypnotism without the consent of the subject or the legal guardian. Never hypnotize except in the presence of a third party, who represents the subject. Never make suggestions without the patient's consent, excepting those necessary to effect a cure. Never use authority over a patient to secure his consent, if you have reason to expect disagreeable effects from the experiment.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

A NOTE UPON AURAL VERTIGO (MÉNIÈRE'S DISEASE) AND THE ORGAN OF EQUILIBRATION.

BY L. HARRISON METTLER, A.M., M.D.,

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Vertigo is a loss of the sense of equilibrium. It may be subjective or objective. The victim may imagine his environment to be stationary while he himself is in a whirling state, or it may seem to him that he is stationary while his surroundings are in a condition of unnatural movement. Vertiginous sensations involve incoordination as well as a loss of equilibrium.

The center for coordination and equilibrium has long been localized in the cerebellum, and since Nothnagel's day it has been assigned to the vermis. Further than this our knowledge did not extend until some recent morphological and embryological observations were made. Upon the high authority of Flourens, Ménière, and others, the semicircular canals were given the credit of maintaining the equilibrium, but how they did it or in what manner they influenced the central nervous system was not clearly made out. Many facts, as I endeavored to show some years ago,[1] indicate that the loss of the sense of equilibrium means something more than the loss of function in the semicircular canals. We have discovered that the apparatus of equilibration, of which the semicircular canals form a part, is a most extensive and complicated affair.

The centers for the maintenance of equilibrium and coordination are intimately related. If a common center and its ramifications can be definitely located, vertigo will be not only an invaluable localizing

1 *Vide* Aural Vertigo (Ménière's Disease), Mettler: *Journal of Nervous and Mental Disease*, January, 1891.

symptom, but all forms of vertigo—nasal, gastric, visual, toxic, etc. —will become as easy of comprehension as aural vertigo.

The maintenance of equilibrium must of necessity depend upon a reflex, and so involve *sensory* and *motor* functions. The apparatus of equilibration should consist of an associating center with outlying ramifications in the motor and sensory fields. Not only should this center be stimulated by appropriate afferent impulses, but it should send out through appropriate channels the required efferent impulses. In a word, it must preside over what is probably the highest of the purely animal instincts, the most intricate form of genuine reflex action. From analogy, therefore, we would look for such a center in the metencephalon, one of the oldest and most primitive parts of the nervous system.

The eighth cranial nerve is a double nerve, its two sets of fibers, cochlear and vestibular, possessing different functions. When traced backward the vestibular fibers are found to terminate in a remarkable group of cells, named after their discoverer the nucleus of Deiters. These cells are large and pyramidal in shape, like those of the anterior cornua, and are in all probability the homologues of the latter. For a long time it was supposed that this nucleus was purely sensory in function, subserving in some way the sense of hearing; hence it was spoken of as part of the auditory nucleus. The structure of its cells, its associations and its development all indicate, however, that its function is efferent rather than afferent. It is situated in the outer angle of the floor of the fourth ventricle, and in the restiform body near the ventral portion of the cerebellum. The neuraxones extending from its large, multipolar, ganglion cell bodies, pass backward through the so-called acusticus territory of the pons and medulla on into the spinal cord. Some of them have been traced along the anterior columns as far as the anterior horns of the lower dorsal region. They are probably homologous with Mauthner's fibers, great long tracts located in the anterior columns of fishes, rising from huge ganglion cells near the origin of the eighth nerve and extending as far as the caudal vertebræ, where they make their exit with the last sacral nerves; the whole tract being known as the fibræ acustico-sacrales and subserving very obviously the function of equilibration.

In the opposite direction the nucleus of Deiters is in connection with the cerebellar cortex through two masses of gray matter known as the *roof nuclei*, because they lie just above the fourth ventricle. At one time it was thought these tegmental nuclei constituted a part of the acustico-cerebellar tract and were afferent in function

because of their sensory association. As a matter of fact their function is efferent, impulses proceeding outward from them to the nuclei of Deiters by way of decussating fibers. Sagittal fibers unite the tegmental nuclei with the cortex of the vermis. Now as the restiform bodies, including the ascending lateral tracts of Gowers and the direct cerebellar tracts, along which sensations from the muscular tissues of the body are borne centrally, also terminate in the vermicular cortex, it is made clear how the nucleus of Deiters becomes a part of the sensory motor reflex and of the cerebellospinal circuit.

The nuclei of the third (oculomotor) nerve, of the sixth (abducens), and probably of the fourth (patheticus), are united with the nucleus of Deiters. The latter's association with the semicircular canals by way of the vestibular branch of the eighth (auditory) nerve has already been observed.

Here, then, is apparently a center wherein sensory impressions of a particular sort are brought together from such remote parts of the body as the general muscular system, the muscles of the eye, and the vestibule of the ear.

Sensations from the viscera may also be conveyed to it, either by way of Clarke's column, the direct cerebellar tract, and vermicular cortex, or through a special connection with the pneumogastric; for in this connection, as Edinger says, it is interesting to note that in teleostei a branch leaves this part of the brain not with the acusticus, but (Stannius) in the nervous system of the *lateral line* supplied for the most part by vagus branches, with which they become associated.

Of course, there are secondary connections by means of which the nucleus of Deiters is still further brought into union with other parts of the encephalon. Cerebral or frontal ataxia is the result, as we now believe (Wernicke, Bruns, Oppenheim), of a partial or complete interruption of the fibers of the frontocerebellar tract, which associates the frontal lobes with the opposite cerebellar cortex. The incoordination and loss of equilibrium, characteristic of lesions of the posterior quadrigeminal bodies, are now easily understood when it is remembered how these bodies functionate in connection with the motor phenomena of the eye.

In a word, this remarkable and long misunderstood nucleus of Deiters must now be regarded as the meeting-place of an immense number of special sensory and motor impulses, to and from remote parts of the body. The undetermined part of the whole question of the maintenance of equilibrium is the exact location of the func-

tion. Are the sensory impulses which are borne in from the various muscular structures finally received, marshaled, and sent outward again in the cerebellar cortex, in the semicircular canals, or in the nucleus of Deiters? This is indeed a difficult question to establish positively. I believe, however, that there are facts enough at hand to warrant the statement that the real center of equilibrium is the nucleus of Deiters, or at least not the semicircular canals as so many would have it. As a highly differentiated organ, performing an important rôle within the general apparatus of equilibration, I believe the semicircular canals should be allowed their full credit, but that they cannot be the sole and essential organs of equilibration is proved, it seems to me, by (*a*) the very brief account of the apparatus of equilibration which I have just given; by (*b*) certain facts which I have elaborated elsewhere (*loc. cit.*); and by (*c*) others which I will now point out.

As stated by Edinger, J. Richard Ewald removed the labyrinth from both sides of a dog. The result, of course, was a loss of muscular tone and of the power to maintain vertical equilibrium. Walking and standing were impossible. Note, however, that these troubles were recovered from, "the tracts for tactile and other impressions making up for the loss." The ablation of the cortical motor areas was next made, with a resulting incoordination and the loss of the power of making any regular movements. But even this was slowly recovered from. Suspicion being awakened that all movements were dependent now solely upon visual control, the mutilated dog was placed in a dark room. He immediately fell helpless to the floor. If this experiment means anything, it means that coordination and the maintenance of equilibrium depend upon several factors, each one of which is capable, up to a certain point, of assuming the whole function. The motor areas of the brain, the visual organs, and the semicircular canals all play an equally important part. If the semicircular canals alone were the organs of equilibrium it is difficult to understand how the maintenance of equilibrium could even in the slightest degree be reacquired after their removal, in spite of the preservation of the tactile and visual senses. As I have shown elsewhere, vertigo and the loss of the sense of equilibrium are the result of a disturbance in a more extensive sensory motor field than is represented in the semicircular canals. In view of the fact that in certain of the lowest vertebrates (fishes) whose movements require the nicest sort of equilibrium there are no semicircular canals; in view of the fact that experimentation has shown, as in the dog, that equilibrium may be

recovered and maintained after the complete removal of the labyrinth; in view of the fact that both anatomy and physiology show that the sense of equilibrium is essentially a complicated sensory motor phenomenon; and finally, in view of the fact that the anatomy of the apparatus of equilibration, of which the semicircular canals form only a part, offers a more rational basis for its sensory motor character than does so limited an organ as the semicircular canals alone: I think, as I stated in my paper on "Aural Vertigo," that we are still justified in asserting that the semicircular canals are not alone the organs of equilibration, and that the vertigo of Ménière's disease is not due solely to injury of the canals, but to the injury done to the elaborate and complicated apparatus of equilibration of which the canals constitute a part.

One object in presenting this note is to show that vertigo, if our knowledge of the anatomy of the apparatus of equilibration is at all correct, may be produced by irritation of any of its other ramifications, as for instance in the eye and in the stomach as well as those in the ear. Hence, it seems to me that Gowers' statement referring to other forms of vertigo than aural vertigo is too much of a pure assumption as it stands: "It is certain that in the majority of cases in which such vertigo has been ascribed to other causes, these have only had an exciting influence and the symptom has been essentially due to the effect of unobtrusive labyrinthine disease, bringing the center into an unstable condition."

100 STATE STREET.

PRACTICAL POINTS IN THE DIAGNOSIS OF EXTRA-PULMONARY COUGHS.

BY ALBERT ABRAMS, A.M., M.D., San Francisco, Cal.

The relegation of a cough to its correct etiology is a perplexing problem. Cough is essentially reflex, and may owe its origin to almost any tissue or organ of the body. Its purpose is to expel foreign matter from the respiratory tract. The intensity of the cough and the quantity of expectoration are usually proportionate. When this relation is disturbed, we must look for an extra-pulmonary cause for the cough. Coughing is an art that must be learned, and may be so far disciplined as to be inhibited. Some forms of extra-pulmonary cough have a distinctive character which aids in their identification.

The phonograph is a valuable means of registering coughs, and gives a permanent record. Studied in this way we learn to recognize certain acoustic phenomena which are characteristic of every cough. An extra-pulmonary cough is to be suspected when a systematic examination of the lungs proves negative. To this rule there are striking exceptions in phthisis; the cause of the cough is not necessarily found in the lungs, but may depend on pharyngeal hyperesthesia, or deformity of the epiglottis. Cough especially manifest during the swallowing of food would lead to a suspicion of pharyngeal hyperesthesia. A cough aggravated by swallowing food may be due to an epiglottis deformed by tuberculous infiltration, which becomes incompetent, permitting the entrance of food into the larynx.

We must not forget that the conventional methods in the examination of the lungs are not always crucial in negativing the presence of an anomaly. Skiascopy of the chest demonstrates the foregoing fact. To my mind no chest examination is complete without the use of the Roentgen rays; I employ them as a routine measure, as I do the low objective on my microscope, reserving the high power for detail work. I do not complete but initiate an examination with the Roentgen rays, and having located a suspicious lung area, the usual methods of examination are employed to interpret its significance.

It not infrequently happens in our chest examinations, where auscultation is alone of value in diagnosis, that no anomalies of the respiratory sound are heard unless special maneuvers are invoked. Natural breathing is of no value in such instances. The patient

must be taught "diagnostic breathing." The muscles of expiration must be brought into forcible action, so that expiration is intensified and prolonged. Auscultation of the lungs in different positions will, by increasing respiratory activities in definite areas, bring out certain sounds. One must not forget that in some persons forced expiration causes a bronchospasm and develops sounds not unlike those of asthma. In such a contingency amyl nitrite inhalations are valuable. If the subject inhales the drug, we need not fear mistaking the sounds provoked by voluntary spasm of the bronchial tree. In some forms of bronchitis spasm may be an element in the dyspnea, and conversely a catarrhal factor may complicate an attack of asthma. Nitrite of amyl by inhalation removes the dyspnea if occasioned by spasm, but does not influence it if dependent on bronchitis. To differentiate the râles caused by bronchitis from those of asthma, auscultate the chest after nitrite of amyl inhalation; the râles of the former persist, while the latter are dissipated. This drug, when inhaled, will bring out certain sounds which would otherwise remain unnoticed.

Iodide of potash is another valuable drug in diagnosis. In suspected apical lung affections, where a modified respiration is present without râles, the latter may be produced artificially by the administration of the iodide. The same agent will also intensify the auscultatory phenomena of an old pleuritis by augmenting the pleural transudate. Bromoform is also an aid in diagnosis. There are many spasmodic coughs in adults as well as children, which are practically cases of pertussis, even though the characteristic whoop is absent. In such atypical instances bromoform may aid us; while it is not a specific in pertussis, it has a decided action on the paroxysms, such as is possessed by very few drugs.

The troublesome hacking cough often present in the pretuberculous state is, as a rule, unattended by expectoration, and this deprives us of a most important means of diagnosis. In such cases I avail myself of a maneuver somewhat similar to that resorted to by genito-urinary surgeons; the latter, before deciding whether a urethral secretion is free from gonococci, inject into the urethra a fluid which excites suppuration, or at any rate augments secretion. If a reexamination of the urethral secretion shows no gonococci, the danger of the subject transmitting the disease is slight. My method does not aim to excite suppuration, for if this were the object it could easily be attained by intratracheal injections. What we want is to augment and to expel the bronchial secretions. The creosote vapor-bath, as suggested by Chaplin (*British Medical Journal*,

1895, p. 1371), answers this purpose admirably. The effect on the patient is to induce violent cough with profuse expectoration. Even in lung tuberculosis where the tubercle bacilli are few or absent, they often appear or become augmented in number after the creosote bath. There is no organ nor region of the body which has not been held responsible for an extra-pulmonary cough.

The Skin.—I have frequently demonstrated the influence of cutaneous irritation on the lungs (*Medical Record*, April 23, 1899; *Medical News*, Jan. 7, 1899). There are susceptible individuals who upon the slightest exposure to a draft will cough. The cough is not provoked, as many suppose, by the inhalation of cold air, for susceptible persons cough even after immersion of the hands or feet in cold water. Although accustomed for years to a morning cold bath, yet every time I enter the bath I suffer from an attack of coughing. I have tested a number of persons to determine whether particular regions on the surface of the body were sufficiently susceptible to an irritant to cause cough; in a few instances only was I able to mark out any such regions, which for convenience I have designated as *tissue zones*. As an irritant, a current of cold air from an air-pump was directed on different parts of the body. Tissue zones were most frequently found on the anterior surface of the neck in the course of the distribution of the pneumogastric. All those in whom the zones were found stated that upon exposure to a draft cough followed. The maneuver just suggested may be applied in the diagnosis of cutaneous coughs.

The Ear.—For a long time it has been known that irritation of the external auditory meatus, through the auriculo-temporal branch of the fifth nerve, would excite coughing. The introduction of the aural speculum will not infrequently excite this reflex. According to Fox, more than 17 per cent of individuals cough after irritation of the internal meatus. As a rule, in ear cough, an examination shows the presence of a foreign body, and the cessation of cough after its removal confirms the diagnosis.

The Nose.—Irritation of the trigeminal branches in the nose is often a cause of cough. The cough areas in the nose are situated about the anterior and posterior ends of the inferior turbinated bodies and that part of the septum lying opposite the latter. The application of the sound to the abnormal or even normal mucosa, in an indefinite percentage of persons, causes cough. The correction of a hypertrophic rhinitis, the removal of polypi, and other anomalies, often cures a troublesome, persistent cough. A thorough rhinoscopic examination will, as a rule, establish the diagnosis of

nasal cough, yet we must not be led astray by every anomaly of the nose. Deviations of the septum, for instance, are estimated to be present in 90 per cent of all adults. Cocaine and the sound must be employed as accessory agents in diagnosis, if the nose be suspected. Employ a moderately strong solution of cocaine, first in one nostril and then in the other, and note if the cough is in any way influenced. Having attained positive or negative results, our next object is to employ the probe, eliciting if possible the cough areas. Having found one or more cough areas, each is cocainized in turn and again probed; if no reaction follows, there is presumptive evidence of a nasal cough.

Nasopharynx.—From this region coughs are less frequently produced. The usual causes are adenoids and the discharge in nasopharyngeal catarrh. In children a cough dependent on adenoids is comparatively common. The cough is worse in damp than in dry weather. The "morning cough," in which large quantities of sputum are brought up, is frequently a symptom of nasopharyngeal catarrh. It has not infrequently happened that I was unable to say positively whether the sputum arose from the nasopharynx or deeper down in the respiratory tract. Such a question appears *a priori* to be superfluous, yet if one has presumably cured a bronchitis, but cough and expectoration still remain, one is often at a loss to say whether the nasopharyngeal catarrh is responsible for it. This question could be decided by treatment of the catarrh, but a diagnosis thus established is a tedious matter. Repeated microscopic examinations show that a diagnosis may be arrived at more easily; not that there are any microscopic constituents in the sputum from the nasopharynx, as one would be led theoretically to believe, but because the general characteristics of the sputum correspond with the secretion from the nasopharynx. To illustrate: A patient presents himself for the relief of a chronic cough; an inspection of the nasopharynx shows secretion; some is removed and the elements under the microscope are noted. If the sputum is subsequently brought to us by the patient, this is similarly examined, and if the microscopic elements correspond with those from the nasopharynx at a previous examination, we are justified in concluding that the expectoration is largely of nasopharyngeal origin.

The Pharynx.—Acute and chronic diseases of the mucous membrane of this region may give rise to cough. A follicular pharyngitis especially excites a cough. Along the lateral walls of the pharynx we find a chain of lymphoid tissue. This may be involved in an inflammation known as pharyngitis lateralis hypertrophia, and

not uncommonly excites cough. This mass of lymphoid tissue, being partially hidden by the pillars of the fauces, often escapes attention, unless with a retractor the palatine arch is drawn forward. Here, again, the probe and a solution of cocaine aid us in diagnosis.

The Tonsils.—Hypertrophy of the tonsils, as well as the presence of cheesy matter or concretions in the crypts, sometimes causes an irritating chronic cough. Adhesions of the tonsils to the pharyngeal pillars have been known to be responsible for a cough.

Uvula.—In my experience an enlarged uvula is the most frequent cause of extra-pulmonary coughs. Inspection shows the uvula of such length that it may touch the tongue, or in the recumbent position its end may touch the epiglottis or even reach the entrance of the larynx. Persons who suffer from an elongated uvula complain of a foreign substance in the throat, and they have a constant desire to swallow as if to rid the throat of some extraneous body. The cough from an elongated uvula is not infrequently associated with nausea and vomiting, the latter symptoms arising from contact of the uvula with the back of the tongue. Laryngospastic symptoms may develop at night, for it is at this time, when the patient assumes a recumbent position, that the cough is most pronounced. The patient soon learns intuitively that the violent paroxysms of coughing may be inhibited by sitting up in bed, or leaning forward. A moderate amount of expectoration is nearly always present, owning to the associated pharyngeal catarrh. Inspection of the throat often shows no real elongation, because some patients involuntarily contract the palate and uvula; therefore they must be taught to relax the parts. The application of cocaine aids in diagnosis. Limiting the application of the cocaine to the uvula alone is of little value; it must be applied to the adjacent structures, from which the reflex act is started. Amputation of the uvula is the only cure; if followed by a cessation of cough the diagnosis is made.

Lingual Tonsil.—Found as an enlargement at the base of the tongue, either in the center as one mass, or on either side of the median line in two or more parts. It is a mass of lymphoid tissue, corresponding in structure to the faucial and third tonsil. When the lingual tonsil hypertrophies, the chief reflex symptom is cough. As a rule, the cough is accompanied by little or no expectoration. Like the cough of an elongated uvula, it is worse when the patient lies down. There is a sensation of a foreign body in the throat which does not disappear on swallowing. The cause of hypertrophy is similar to that of the other tonsils, and the affection preponderates in women. Diagnosis is made with the laryngoscope. The tonsil is

found to be red and swollen. We find it partially or completely filling the glossoepiglottic fossa, and sometimes encroaching beyond the free border of the epiglottis. If the lingual tonsil is suspected we may employ cocaine locally.

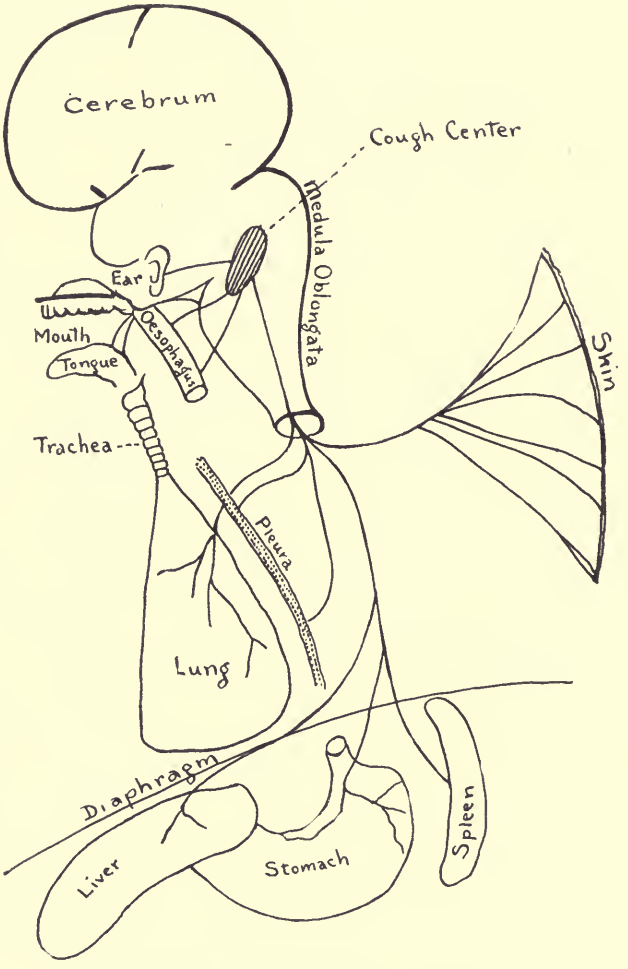

Figure showing reflex sources of cough.

The reflex act of coughing may be discharged from the teeth, esophagus, liver, spleen, and pleura. Recently I had under observation a hysterical woman with complete anesthesia of the fauces, who suffered from esophagismus. This was a suggestive case for studying the esophageal cough. Upon introduction of the

esophageal sound, cough was invariably produced, yet when the esophagus at its beginning was cocainized, no cough followed the introduction of the sound. Palpation of an enlarged liver or spleen is occasionally followed by cough, which can no doubt be referred to the peritoneal covering of those organs innervated by branches of the vagus. Nor must we deny the rôle played by the pleura in the production of coughing. The individuals suffering from acute pleuritis will cough with the slightest pressure of the stethoscope over the affected area. The same phenomenon can not infrequently be evoked in normal persons. It has often been my experience in cases of acute pleuritis, where opiates were of little avail in controlling a persistent cough, to find that strapping the affected side would give almost instant relief to the troublesome cough. The so-called stomach cough, while not supported by the experiments of Kohts, is largely corroborated by clinicians. Some attribute the stomach cough to a pharyngitis complicating the stomach affection, whereas others contend that the eructated gases reaching the larynx induce coughing. What deserves recognition, however, is the fact that many persistent coughs subside when treatment is directed toward the gastric disease. Gynecologists recognize a cough which is discharged from the uterus and contiguous structures. Local treatment, especially by pessaries, acts quickly when retroversion, prolapse, etc., are complications. Hysteria has a distinctive cough which is loud and barking, and gives the impression of being produced with the object of attracting attention. Associated with hysterical aphonia and other stigmata of hysteria, it is readily recognized. Attention has been directed to a *nervous cough*, independent of hysteria. Such a cough naturally follows a catarrh of the larynx or pharynx, and persists after the original trouble is cured. It is difficult to explain the nervous cough, otherwise than by supposing that the reflex circuit remains in a condition of increased irritability. The coughs dependent on intrathoracic disease, like mediastinal tumor, aneurism, and dilated heart, need not engage our attention, for they are associated with phenomena demanding the employment of all the physical methods of diagnosis.

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THERAPEUTICS: PAST, PRESENT, AND FUTURE.

BY GEORGE F. BUTLER, M.D., CHICAGO, ILL.

The history of medicine during the early epoch which marked the awakening of scientific thought is enveloped in baffling obscurity; myth and tradition of necessity supplying the place of more intelligent investigation. Notwithstanding perplexities, however, it is of profound interest to the modern student to trace the far distant sources of therapeutic knowledge, examine attentively the gradual development of the healing art, and in the brilliant achievements of the nineteenth century recognize only the flower and fruitage sprung from the seeds of progress and planted in the human mind in remote ages—yes, even in the dawn of civilization. Moreover, the retrospective study of medical science can but enhance our veneration for the struggling intellect of man, and enable us to form a more adequate conception of the patience and labor which have marked the evolution of a physician's attainment.

Such considerations occur to one who looks deeply into the annals of the past, striving to discern so far as existing records permit the earlier status of therapeutics.

It has been philosophically remarked that the progress during the present century, familiar to all, has been marked by the employment of inductive methods of reasoning in the departments of physiology, pathology, and clinical medicine. By the results of such methods and the development of a scientific habit of thought, the science of medicine, which is that of physiology in its broadest sense, the physiology of health as well as the physiology of disease, including the effects of drugs, can well fill its minor place in the science of biology. The old cry of the uncertainty of medicine, the unscientific character of the art of medicine, cannot be held up to us. No Montaigne can at this day hurl the shafts of ridicule and satire that stung to the quick and stimulated honest doubt in the sixteenth century. Well do we know, ourselves, our limitations as well as our power, and with becoming modesty do we uphold the claims of medicine as a science. If science is "knowledge gained by systematic observation, experiment, and reasoning; knowledge, coordinated, arranged, and systematized," well fortified is he with cynicism who has the hardihood to maintain the contrary.

The many achievements which have established the present advanced status of medicine are too familiar to require detailed rehearsal. The study of pathology has attracted new and world-

wide attention, accompanied by wholly unprecedented results and a skill in scientific investigation of incomparable value to mankind. A greater knowledge of etiology, a larger comprehension of the systematic rationalism of the times, and a more rigid adherence to the scientific truths revealed by practical observation, have served to place the medicinal art upon a loftier plane of human understanding. Our century opened with a sound preference for inductive research over the less valid generalizations of the past. Virchow, Cohnheim, Koch, Lister, Pasteur, Bernheim, Kitasato, and hosts of other ardent investigators have deftly explored the arcana of chemical, physiologic, and biologic research. Specialists of remarkable acumen have revealed to an astonished world secrets of nature which may be, and indeed are now, of vast importance to the welfare of mankind. Foremost among the new and startling discoveries must be regarded the mysterious yet indubitable effects produced by antitoxins, and their influence upon certain infectious diseases. A consideration of the matter is therefore pertinent.

Great progress has been made during the past year in the field of serum-therapy, though much remains open to question, and many things cannot yet be explained. The field for the investigator is perhaps larger than ever before. For a better understanding of the antitoxins and their therapeutic application, a few essential facts should be borne in mind. An antitoxin is not the direct result of bacterial action, but is properly described as an unknown body resulting from the resistance of healthy organism to the toxins of pathogenic bacteria. In practice this antitoxic body comes to us in the blood-serum of animals, usually the horse. When properly prepared and properly kept in aseptic containers, the antitoxins are not all dangerous—in fact, are as innocuous as an equal amount of blood-serum or normal salt solution administered in the same way. We use antitoxins to resist the effects of infection with pathogenic bacteria because the results of such infection are due to the toxins elaborated by those bacteria, and not to the bacteria themselves. The antitoxins do not destroy the bacteria—in other words, are not germicides. In fact, the antitoxic serums are themselves good culture media. One theory of their action is that they neutralize the toxin, thus giving the natural bactericidal powers of the body an opportunity to exercise their function.

The following brief description of the process employed in the laboratory of Parke, Davis & Company will, I trust, show that I am justified in the above definition of an antitoxin.

Young horses in perfect condition are selected and kept under

careful observation by an expert veterinarian for three or four weeks. Temperature is taken three times a day for two weeks, and during this time they are carefully tested with mallein for glanders. When a horse is found to be perfectly healthy, he is taken into the stables with the other antitoxin horses, and there receives his first dose of diphtheria poison, or more properly a solution of the toxin of the Klebs-Loeffler bacillus. This is obtained in the following manner: A culture is obtained from the throat of a patient suffering from a virulent attack of diphtheria. The Klebs-Loeffler is isolated from this culture and planted in a flask of bouillon, which is kept in an incubator for ten days. At the end of this time it has attained its maximum toxicity, and the bacteria begin to die of their own poison. The toxin which they have elaborated in the course of their existence is held in solution by the beef tea, trikresol added. This bouillon solution of toxin is then filtered through porcelain to remove the bacterial cells and any other extraneous matter. It is then ready for injection into the horse. About one-tenth of one cubic centimeter is injected subcutaneously. The horse responds with all the constitutional symptoms of diphtheria, such as a chill, fever, loss of appetite, more or less pharyngeal paralysis with regurgitation of food, and occasionally death of heart paralysis. Upon recovery, which comes within a few days, he is given a slightly larger dose. This treatment is continued for about one year, when he will take from 2000 to 3000 times the initial dose without reaction. He is then ready for bleeding. About 6000 cubic centimeters of blood is drawn from the external jugular vein. This is allowed to clot, and the serum obtained is what is known commercially as antitoxin. Cultures are made from this for the detection of any possible contamination. If there is no contamination present, it is siphoned off into the glass bulbs, in which it appears in the market, first having 0.4 per cent trikresol added. After standing a few days to allow the development of bacteria, should any be present, cultures are again carefully made, and if these show presence of bacteria in the serum, the whole lot is destroyed. If it is free from contamination, it is ready for the market.

In making the streptococcus antitoxin a culture is made of bacteria obtained from two sources—erysipelas and puerperal septicemia. This is done because Marmorek, Paltauf, and some other eminent bacteriologists believe that streptococci of various infections belong to different families—that the streptococcus of erysipelas is not identical with the streptococcus of puerperal fever. It is but fair to say that others equally eminent do not hold this view. To cover

this point, the cultures obtained from the two sources are used. The virulence is increased by passing through rabbits. After passing through about fifty rabbits, a culture is planted in beef tea, and the same course pursued as for diphtheria antitoxin. Antitubercle serum is obtained by immunizing horses with the original Koch's tuberculin.

In support of the proposition that the symptoms in infectious diseases are due to the toxins elaborated by the bacteria and not to the bacteria themselves, the following quotation from the last edition of Sternberg's Manual of Bacteriology is given:

"Certain saprophytic bacteria when injected beneath the skin of a susceptible animal multiply at the point of an inoculation and invade the surrounding tissues, giving rise in some instances to the formation of a local abscess, in others to an infiltration of the tissues with bloody serum, and in others to extensive necrotic changes. These local changes are due not simply to the mechanical presence of the microorganisms which induce them, but to the chemical products evolved during the growth of these pathogenic bacteria. Indeed, their pathogenic power evidently depends, in some instances at least, upon these toxic products of their own growth, by which the vital resisting power of the tissues is overcome. Other bacteria, while they develop chiefly in the vicinity of the point of entrance—by accident or by inoculation—produce a potent toxic substance which gives rise to the general symptoms of a serious character, such as tetanic convulsions (bacillus of tetanus), or intense fever and nervous phenomena (micrococcus of erysipelas). The pus cocci and various other saprophytic bacteria, when introduced beneath the skin, give rise to the inflammation of abscesses, unattended by any very considerable general disturbance; and also to secondary purulent accumulations—metastatic abscesses.

"That this is not due simply to their mechanical presence is shown by the fact that powdered glass and other inert substances, when thoroughly sterilized, do not give rise to pus formation when introduced beneath the skin or when injected into the cavity of the abdomen. On the other hand, it has been demonstrated by the experiments of Grawitz, De Bary, and others that certain chemical substances which act as local irritants when brought in contact with the tissues may induce pus formation quite independently of microorganisms; nitrate of silver, oil of turpentine, and strong liquor ammoniæ have been shown to possess this power. And it has been demonstrated by the recent experiments of Büchner that sterilized cultures of a long list of different bacteria—seventeen species tested

—give rise to suppuration when introduced into the subcutaneous tissues.

"In diphtheritic inflammation of mucous membranes we have a local invasion of the tissues and a characteristic plastic exudation. In true diphtheria the local inflammation and necrotic changes in the invaded tissues are not sufficient to account for the serious general symptoms, and we now have experimental evidence that the diphtheria bacillus produces a very potent toxic substance to which these symptoms are no doubt largely due. The diphtheria bacillus of Loeffler appears to be the cause of the fatal malady which goes by this name, but undoubtedly other microorganisms may be concerned in the formation of diphtheritic false membranes."

In addition to this valuable information afforded us by Dr. Sternberg, additional evidence as to the correctness of this conclusion is the fact that horses, while being immunized, give the classical constitutional symptoms of each disease, though they are treated with the filtered toxin which contains no bacteria whatever. A possible exception may be made of anthrax, though Sternberg distinctly states that it acts in the same way.

As to the therapeutic action of antitoxin, little or nothing is known positively. It seems reasonable to conclude from experimental evidence that the antitoxin neutralizes the toxin in the body, and thereby gives the natural germicidal powers an opportunity to dispose of the bacteria. It may be that it has the additional property of stimulating phagocytic and possibly other bactericidal functions. The following experiments made by Messrs. Martin and Cherry, in England, and described in an editorial in the *Journal of the American Medical Association* of August 27, 1898, will be of interest in this connection. Behring, Ehrlich, and Kanthack have advocated the theory that the antagonism between toxins and antitoxins is a chemic one, somewhat analogous to the neutralization of an acid by an alkali, while Büchner, Metchnikoff, and others have maintained that it is indirect and operates through the cells of the organism. Martin and Cherry used a snake-venom antitoxin. A considerable number of guinea-pigs were used. At 68° C. the antitoxin was destroyed, while the venom retained its virulence. In the control experiment with the venom only, all the animals died within a few hours. A number of mixtures were made of one cubic centimeter of antitoxin with twice the fatal dose of venom; others with three and four times the fatal dose. These mixtures were allowed to stand at the usual laboratory temperature (20° to 23° C.) for two, five, ten, fifteen, and thirty minutes respectively, then heated to 68° C., and then injected.

As above remarked, this heat destroyed the antitoxin, so that none was injected. The animals subjected to the mixture of the stronger doses of ten minutes or less died, or were seriously affected; all of those receiving the fifteen-minute mixtures survived, while the thirty-minute mixtures produced no symptoms whatever. Similar results were obtained with diphtheria antitoxin and toxin. These experiments seem to show as far as anything can that the neutralization of toxins may occur in the test-tube, and that the vital processes in the organism and the body cells are not essential. These gentlemen made further experiments by passing a mixture of toxin and antitoxin through a film of gelatin on a Pasteur-Chamberland filter. This was porous for toxin, but not for antitoxin, owing to the difference in the size of their molecules. The toxin which passed through the filter, after having been mixed with antitoxin, was neutral. The unavoidable conclusion from this experiment is that the toxin was neutralized before filtration.

Further experiments were made to prove their theory that toxins are albumoses and antitoxins globulins, but their experiments do not appear to be conclusive.

The supposition that the administration of antitoxin is followed by a stimulation of the germicidal powers of the body seems to be reasonable, at least in the case of the antistreptococcic serum, since the streptococci disappear with the passing away of the signs and symptoms. On the other hand, the Klebs-Loeffler bacillus is found in the throat for weeks and even months after the disappearance of all symptoms of diphtheria in cases treated with the antitoxin.

The present status of diphtheria antitoxin may be presented in a few words. It has established itself as a specific in the treatment of this disease. During the past year the use of larger doses has become more general, and it seems certain that better results are obtained. The administrators of the Chicago Department of Health give two thousand units in all cases of suspected diphtheria, and employ one thousand units as an immunizing dose. During the months of November and December this department treated 219 cases of bacteriologically proven diphtheria, all charity cases, with a death-rate of 4.1 per cent. Some two and a half years ago, when antitoxin was not used, the death-rate from diphtheria treated by this department was about 35 per cent.

A considerable number of reports have been published showing good results in the use of diphtheria antitoxin in other diseases, as asthma, acute bronchitis, etc. Its favorable action in these conditions cannot be satisfactorily explained. Dr. McClintock says

that possibly the natural immunity of the horse against these diseases will account for the favorable action of his blood-serum in these diseases. In other words, Dr. McClintock thinks its therapeutic action in these conditions is due to the blood-serum, and not to the diphtheria antitoxic body present in the serum.

Antistreptococcic serum gives promise of being second only to the diphtheria antitoxin in point of therapeutic value. It has been most successful in erysipelas and puerperal septicemia. Cases of scarlet fever are reported where it has been useful in shortening the duration of the disease, and in preventing unfortunate complications and sequelæ, such as otitis media and other suppurative processes due to streptococci.

A valuable contribution to the literature on this antitoxin was made by Dr. W. L. Baum, of Chicago, and published in the January number of MEDICINE. A perusal of this essay will repay any one interested in the antitoxin treatment of disease. Dr. Baum reports twenty-two cases coming under his observation in which the serum was used. "Of these nineteen were cases of erysipelas; one of erysipelas plus tubercular nuchal glands; and one of erysipelas with puerperal septicemia and double labial abscess. The last was the only fatal case. In four of the cases of erysipelas only one injection of the serum (10 cubic centimeters) was used, with a reduction of temperature to the normal within twenty-four hours; no relapse. In six others four injections of 10 cubic centimeters each were given upon consecutive days, with a rapid recovery on the fifth day; no relapse. In three the injections were followed by a reduction in temperature within twenty-four hours, but relapsed at intervals of from three to six days. In all of these cases the serum was again used. In one, repeated injections seemed to exercise no effect upon the temperature, and the treatment was followed by sponging, which seemed more effective. The others were old cases in which there had been a marked tendency to relapse; in these not only was the temperature reduced, but the cases showed rapid improvement and recovery. During this time many other cases of erysipelas were under treatment at the hospital, but an effort was made to select those cases which were characterized by high temperature or complications."

Dr. Baum also speaks of Baginsky's report of results in forty-eight cases of scarlatina, in which antistreptococcic serum was employed. In twenty-seven the course of the disease was unusually favorable, the majority recovering without complications. A striking feature in all was the rapid reduction of temperature. In

exceptional cases albumin appeared, and a single case had nephritis with tube-casts and blood-corpuscles. In a second group of cases of a severe type the results were not so favorable, although it is possible that in these the amount of serum employed was insufficient. Among the whole number of cases there were seven deaths, or 14.6 per cent, which compares favorably with the percentages (between 22.6 and 24.4) in the years from 1890 to 1895. The mortality among cases treated by other means during the same epidemic as that in which the serum was employed was 24.9 per cent. The untoward effects of the injections were similar to those observed after injections of diphtheria antitoxin. The future for this serum in the treatment of chronic phthisis is bright with hope. We are told that in the majority of cases simple uncomplicated tuberculosis of the lungs is not a dangerous disease—that it is the added infections, such as streptococcic, staphylococcic, the yeast fungus, and others, that kill. Dr. Robert Reyburn, of Washington, D. C., makes the statement that the vast majority of persons over sixty years of age who die from any cause have had tubercular deposits in their lungs. The fact that post-mortem examinations in public hospitals and other public institutions show tubercular lesions in the majority of subjects would indicate that tuberculosis in the lungs is usually a self-limited disease. Of these complications the most frequent, and probably the most important, are the streptococci. In a few cases where the antistreptococcic serum has been used the reports have been almost uniformly favorable. However, its value is not by any means demonstrated.

It is to be regretted that tetanus antitoxin does not in clinical use do all that it will do in the laboratory. It has been used in a considerable number of cases, but in nearly every instance without any result that would justify us in regarding it as a great curative agent. However, it should be used early in every case of tetanus, and in large doses, because it is, like the other serums, harmless, and the patient has a somewhat better chance for recovery.

Not until our means of diagnosis have been improved by bacteriological methods or otherwise can we expect great results from the tetanus antitoxin. The following explanation for inefficiency of this antitoxin has at least the merit of originality on the part of its author, and some plausibility: "The toxin of the tetanus bacillus has a chemical affinity for nerve tissue, and enters into chemical combination with and destroys such tissue, and it is this chemical combination and destruction in the nerve centers which produces the tetanic convulsions. The antitoxin has no such chemical

affinity and neutralizes only that toxin remaining in the blood-current, and of course it cannot repair the nerve tissue lesion. When we are able to diagnose tetanus early, the antitoxin will be used successfully. One or two cases have been successfully treated with intracerebral injections of antitoxin, the theory being that the antitoxin should be placed where it could neutralize the toxin which is producing the convulsions by means of its action on the nerve centers. The value of this method of administration has not been proven fully, as many cases have been treated unsuccessfully."

As a preventive measure, the tetanus antitoxin is all that can be desired. Dr. Joseph Hughes, one of the most eminent and conservative veterinary surgeons in Chicago, says that he has used the tetanus antixoxin as a prophylactic in over five hundred cases following wounds both surgical and accidental. Not one has developed the disease, though he has used it where he was justified by former experience in expecting tetanus to show itself. Dr. Hughes uses ten cubic centimeters as a protective dose and injects it five to seven days after the suspected inoculation.

The time has come when it is the duty of every railroad company to authorize the use of this serum as a prophylactic by its surgeons. It should be used by every surgeon treating wounds liable to be infected with the bacillus tetanus. It costs a very small amount of money to protect a man absolutely against this terrible disease.

The antitubercle serum has not proven itself of more value than a great number of other remedies vaunted as specifics in this disease. Maragliano, of Italy, continues to send encouraging reports, and has recently erected a tuberculosis hospital in or near Rome where his antitoxin is to be used. It must be confessed, though regretfully, that this serum has not been a marked success in this country.

The bacteriologists of the Chicago Department of Health are at present studying the bacillus of influenza, which they have succeeded in isolating. Though it is a long journey from the discovery of a bacterium to the successful production of an antitoxin to the effects of that germ, still it is a matter of interest to know that the exact cause of the dread epidemic is at last known.

These scientists are now in the midst of a thorough investigation of the bacteriology of scarlet fever.

When using antitoxin, the necessity of obtaining serum of a reliable manufacturer cannot be too strongly urged. Everything depends upon the laboratory. For instance, we cannot tell from the appearance of a package of serum whether it contains one hundred

units or one thousand units, or none. We cannot tell whether it comes from a healthy animal or whether it was contaminated with bacteria when bottled, or whether it has become contaminated after leaving the laboratory. Only that put up in hermetically sealed bulbs is absolutely free from the possibility of contamination.

Foreign serums have shown themselves to be inferior to the American in some respects. This is due, first, to the fact that the foreign antitoxin has been shipped a long distance; secondly, the technique of production is not so perfect; and thirdly, the European manufacturer regards the market in the United States in the light of an orange to be sucked as dry of profit as possible in the shortest time. In the March number of *Pediatrics* is a report which says that the serum on the London market in 1897 was a worthless article; that one German house supplied in London an antitoxin which was warranted to contain one hundred units, but which in experiment gave only 17.5, while another sold as containing 200 units gave only 30 units. Only a short time ago there was current an able-bodied rumor to the effect that German manufacturers were sending to this country diphtheria antitoxin which had been rejected by their own government. The vast majority of unfavorable reports on the use of the antistreptococcic serum have come from European physicians or from physicians of this country who have used the foreign serum. The European manufacturer does not take so long a time to immunize his horses, and does not usually possess so virulent a toxin for immunizing purposes. Then, too, the foreign serum is necessarily subjected to many and great changes of temperature incident to long transportation, while wending its devious way from the European laboratory to the American physician. While the American laboratories are willing to exchange old serum for fresh, the foreigner of course cannot do this, and after his serum has become too old it is a dead loss to the physician or druggist, or is injected into the patient sometimes with unfortunate consequences.

The action of Professor Emil Behring in obtaining a patent on diphtheria antitoxin, and his present efforts to obtain a patent on tubercle antitoxin, have justly met with the decided disapproval and condemnation of every American physician who has any belief in the ethics of the profession. Various medical societies, including the Mississippi Valley Medical Association, the Chicago Medical Society, and many others, have passed resolutions expressing their indignation, and promising their active support to the American manufacturers who are engaged in litigation with the owners of the patent. Perhaps no subject has been taken up so promptly by the medical

press. Every one of the better periodicals has had at least one editorial scoring Professor Behring in the severest terms.

Permit me to add to the foregoing detailed treatment of serumtherapy a few considerations touching another instance of progressive medicine — our improved knowledge of the laws governing the science of pharmacology.

A great step in the advancement of the science of pharmacy is the accurate estimation of the activity of various drugs by testing them upon living animals. This is known as the physiological assay. For some years the better class of manufacturing pharmacists have made a chemical assay of the various drugs amenable to such an examination. It has long been known, however, that the activity or strength of many drugs, such as cannabis indica, ergot, strophanthus, and digitalis, cannot be determined by the chemist. For instance, ergotin does not represent the therapeutic value of ergot, nor does cannabin represent that of cannabis indica, nor digitalin that of digitalis. Unfortunately the drugs of this class are the very ones which vary most widely in their activity, and are also the ones which the physician gives most carefully, and from which he wishes to obtain the most definite results. By the physiological assay the manufacturer tests each lot of drugs on a number of animals and does not allow the product to leave his laboratory until he has obtained definite results. The conclusion is inevitable that the physician will obtain his results much more surely with preparations so standardized than he will with those which have not been assayed. A brief description of the method of these physiological tests as given by Dr. E. M. Houghton is interesting.

From times prehistoric it has been observed that in fowls, swine, and other animals, as well as man, fed with ergotized rye or with bread prepared from the flour of such grain for a considerable length of time, the poisonous action of the fungus is frequently manifested by gangrene and sloughing of the peripheral parts, as the comb of fowls, ears of hogs, and ears, nose, fingers, and toes of man. Two particular types of ergot poisoning have been observed, namely, ergotismus gangrenosus and ergotismus spasmodicus. Kobert and his pupil Grünfeld were the first to employ the feeding of ergot to roosters in order to determine the activity of the crude drug or of the products isolated from it. However, these investigators employed the action only for experimental purposes.

In making the preparations of ergot, the carefully selected crude drug is tested by being fed to roosters, a certain number of grains to a certain weight of fowl. If it is of normal activity, it produces

the local effect in the comb and wattles. This drug is then carefully exhausted with the proper menstruum, and the finished product is again tested in the same way. About one-third of the ergot thus tested is found to be inert. If the finished product proves itself below the standard, more of the drug is exhausted with the same menstruum.

The therapeutic importance of the heart tonics—digitalis, strophanthus, and others of the group—is now recognized, and these drugs are universally employed by physicians in their daily practice. We are not generally accustomed to think of the heart tonics as being the most poisonous remedies employed in therapeutics, yet it is true. According to some of the best authorities, the maximum dose of extract of digitalis is about one-half as great as the maximum dose of extract of belladonna; while strophanthin, the active principle of strophanthus, is three times as poisonous as atropine, ten times as poisonous as strychnine, and twelve times as poisonous as absolute hydrocyanic acid. It would be considered dangerous pharmaceutic practice to allow preparations containing atropine, strychnine, or hydrocyanic acid to be sold without first being subjected to careful chemic assay and standardization. The United States Pharmacopœia gives elaborate methods for the exact quantitative determination of these constituents; while owing to the fact that the obtained active principles of the heart tonics are glucosides so easily decomposed by chemic manipulation that an assay cannot be made, no directions whatever are given for the determination of the physiologically active properties of the galenical preparations of these drugs, and the tests for the purity of the respective glucosides are of little value. I shall speak of the physiologic assay of strophanthus, its active constituent strophanthin, and its pharmaceutic preparations. These will serve as types. About thirty varieties of strophanthus have been discovered. It is claimed that only six varieties contain strophanthin, while a few contain a still more active glucoside, ouabain. As found in the American markets, the drug generally consists of a varying mixture of the seeds of *Strophanthus Kombe* and *Strophanthus hispidus*. Preference is generally given to *Strophanthus Kombe*, since it contains about 0.95 per cent strophanthus, while *Strophanthus hispidus* contains about one-third less. The amount of contained strophanthin is partly dependent upon climatic conditions. It is a well known fact that the physiologic activity of digitalis leaves varies within wide limits from year to year. Holmes, of London, who has given this matter much attention, claims that only by purchasing the seeds in the follicle

and testing a seed from each follicle can a reliable preparation of strophanthus be made. An assay based on the amount of extractive contained in a given tincture is of little value to the physician, since the extractives consist largely of chlorophyll and other inert substances.

In making a qualitative assay a solution of the crude drug or its active constituent is applied to the laid-bare frog's heart, and the slowed rhythm, the less and less perfect diastole, the increased systole, and finally complete inhibition in systole, are noted. Intravenous injections of such solutions into dogs and rabbits are made with careful observation of the variations in blood-pressure and heart-beats, as shown by graphic tracings reported on the kymograph.

A quantitative estimation by pharmacologic methods is a much more difficult problem. Many series of experiments were necessary in order to decide what method is best for this work. Finally, the most practical method was found to be the determination of the minimum fatal dose on lower animals. Accordingly, rabbits, guinea-pigs, rats, frogs, etc., were employed, the frogs being finally chosen as the best adapted for the purpose. Different species of frogs vary considerably in reaction to the poisons, but the same species behave much alike. The method of administering the poisons and observing results may be briefly stated as follows: The strophanthin or tincture of strophanthus is dissolved in normal salt solution in such strength that the total quantity to be injected shall not exceed five cubic centimeters. The fluid is injected through the frog's mouth into the abdominal lymph sac. Great care is taken not to puncture the skin, as this will allow a portion of the injected fluid to leak out. After injection, the frogs are placed in wide frog glasses, the plates containing about a quarter of an inch of water. Several series of five frogs each are injected for each sample of the drug to be assayed, the first series to be injected with a drug of known standard strength. The second series is injected with doses varying considerably in size. The third series is injected after the approximate dose of poison has been found from the second series. From the third series the minimum dose is almost surely fixed. A fourth series is finally injected, which fixes the limit of strength very closely. The minimum fatal dose should kill at least three frogs out of five. If a less number die, other series are injected with slightly increased doses.

A series of fourteen experiments made with tinctures prepared from different lots of the seed as found on the market showed the

fatal dose of the strongest to be .00010 cubic centimeter per gramme of body weight, and of the weakest to be 0.33 cubic centimeter per gramme of body weight. Samples of strophanthin were obtained from three of the best manufacturing chemists in the world. These were supposed to be pure strophanthin, yet one was ninety times as strong as another, the others varying between these limits. The digitalin varies greatly in strength, but much less than strophanthin. Both strophanthin and digitalin are given daily in tablet or pill form, the amount of active ingredient being apportioned by weight — a splendid opportunity for the sudden termination of a favorably progressing heart case should the patient happen to have the prescription refilled from a fresh bottle. The only way that such remedies can be taken with any degree of safety is to have them prepared from stock of known physiological strength.

The drugs assayed by the physiological method are: Ergot, cannabis indica, digitalis leaves, strophanthus seeds, convallaria majalis, elaterium, and cocaine. It is worthy of note that of the crude drug cannabis indica about 50 per cent is found to be inert.

We have traversed—albeit cursorily when we consider the magnitude of the theme—the vast field embraced in the history of medicine. In closing the subject a retrospective glance will show the magnificent achievement of the present day compared with the crude knowledge of former centuries. The acquisition of knowledge, however, is like the ascent of a mountain — the higher the point attained, the wider the horizon and the less definite our preception of details. We have, it is true, reached a clearer, purer atmosphere; yet, as the law of compensation presses upon us, we must constantly devise new methods of scientific conquest. As the telescope has overcome space, let us hope that no minutiæ of medical knowledge will forever resist the genius of patient investigation in the domain of therapeutics.

"Medicine has for its object the relief of suffering and the prolongation of life. There exist many limitations to the successful accomplishment of this object. The limitations of medicine are less numerous to-day than in the past, and many of the obstacles to success in the prevention of disease and the healing of the sick will be removed in the future.

"Medicine, as a whole, is not a science. Of some branches which enter into it our knowledge is exact, of others our information is theoretic, while every day adds to our knowledge and removes many obstacles from the path of progress. The chemic laboratory and the microscope have done much and will do more to make medi-

cine a science. Progress in knowledge of chemistry and biology has been wonderful in the last twenty years, and this knowledge has removed many of the limitations of medicine. Strange as it may seem, the limitations of medicine which man is striving to remove are due to man himself.

"Man is the highest type of animal, endowed with a mind capable of reason, and gifted with a means of communication with his fellows; and yet man is the very source of his own undoing. The original man was doubtless perfect in mind and body, the master of all created things. Like all organic life, his span was made up of periods of birth, growth, maturity, and decay. He was doubtless able to combat his foes, and sink at last, in the fulness of his years, into euthanasiac sleep. The history of man since the fall is like the repeated pages of a book. Vicious habits mark his footsteps, whether civilized or barbarian; his habits of work and of rest, his food and drink, are not rational; he contaminates the air he breathes, the water he drinks, and the food he eats. The water sources and the earth, contaminated by man, become soil for the growth of the germs which infest and sicken him. His contaminated body begets a prototype, imperfect in mind and body. From the cradle to the grave a degenerate being, he fights against a mighty host, bred of his own shortcomings. Most of the infectious and contagious diseases may be classed as preventable; most of them are filth diseases, and they cannot exist in the presence of perfect cleanliness."

SOME CLINICAL OBSERVATIONS ON THE ACTION OF THE THERMAL WATERS OF GLENWOOD SPRINGS IN GOUT AND LITHEMIA.

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The extremely favorable therapeutic results obtained in some cases of gout and lithemia by the use of the Glenwood Springs waters have induced the writer to offer these notes, for the purpose of interesting the profession more widely in this most important and ever-growing branch of medicine, as well as being in compliance with the many requests of his *confrères* who have visited the resort.

Glenwood Springs, in the heart of the Rocky Mountains, at an elevation of 5600 feet, situated at the junction of the Pacific coast lines of the Denver & Rio Grande and Colorado Midland Railways, and at the conflux of the Grand with the Roaring Fork River, is indeed richly endowed by nature with resources and attractions. The picturesque scenery of this region, amid chains of grand mountains, glistening rivers and brooks, bright valleys and bold scenic cañons, together with the incomparable climate, with its eternal sunshine and purity of atmosphere, make this an ideal spot for everybody seeking health, rest, or pleasure.

The springs, situated on both sides of the Grand River, are numerous, about fifty of which are known, but there are probably many more which issue forth into the river-bed. The aggregate flow is an inexhaustible one, estimated at 6000 gallons per minute. The constituency of the waters from the various springs is uniform, and the temperature 127° F. The analysis of the water, made by Professor Chas. F. Chandler, of New York, is as follows:

One U. S. Gallon Contains	*Glenwood Yampah Springs.
Sodium chloride	1089.8307
Sodium bromide	0.5635
Sodium iodide	trace
Sodium phosphate	trace
Sodium carbonate	.....
Sodium sulphate	.....
Magnesium chloride	13.0994
Magnesium bicarbonate	13.5532
Magnesium sulphate	.....
Potassium sulphate	24.0434
Potassium chloride	.....
Calcium sulphate	82.3861
Calcium bicarbonate	24.3727
Calcium carbonate	.....
Lithium bicarbonate	0.2209
Iron bicarbonate	trace
Iron sulphate	.....
Silica	1.9712
Alumina	trace
Total solids (in grains)	1250.0411

*Carbonic acid and sulphureted hydrogen are given off at the springs.

It will be observed that this is a sulpho-saline-alkaline water, one of the most highly mineralized medicinal waters known, and extremely rich in salts most celebrated for their therapeutic value. The water is used for bathing and drinking purposes. A tumblerful, taken in the morning before breakfast, acts as a laxative, producing one copious, thin movement, apparently charged with bile, without the slightest griping.

The bathing accommodations comprise: (1) A three-story stone bath-house, 160 feet long, containing Roman baths, porcelain tubs, cabinet vapor-baths, douches, and a medical gymnasium for Swedish movements. In this building are also the doctor's office, laboratory, and reception rooms. (2) Adjoining the stone bath-house is the immense bathing pool, built of stone and brick, 600 feet long and 110 feet wide, with a depth of water varying from 3 to 5½ feet. The water is supplied by the adjacent Yampah spring, which yields 1700 gallons per minute, and is kept at an even temperature of about 90° F. at all seasons. This swimming pool is very popular among both health and pleasure seekers. (3) The vapor caves are unique, and very valuable adjuncts in the treatment of many complaints. These are small, natural caves in the rock at the riverside, in the floors of which springs of the same character as described above boil up, filling the space with vapor, carbonic acid, sulphurous acid, and sulphureted hydrogen, and raising the temperature to 112° F. A few minutes' stay in this atmosphere suffices to produce profuse perspiration, which will continue indefinitely after leaving if not checked by cooling off. The original "Old Cave," said to be long known among the Indians and early settlers, proved inadequate to accommodate the increasing number of bathers, therefore the "New Cave," close to the hotel, has been utilized. Here a sumptuous cave house has been erected, fitted out with a large number of dressing-rooms, a spacious lounging-room, douches, showers, massage-rooms, etc.

It would be beyond the scope of this paper to attempt to discuss, comparatively, the merits, chemical properties, and physiological action of the Glenwood Springs thermal waters in reference to those of other springs. Suffice it to mention that many physicians interested in the matter, as well as the writer, after careful investigation, have convinced themselves that these waters rank among the highest in therapeutic efficacy.

As a drinking-water, "Yampah" has proved itself a useful remedy in many cases of lithemia. Its action is that of a mild laxative and diuretic.

The action of the waters, in the form of *baths*, is still more striking. A vapor cave bath of eight to ten minutes' duration is sufficient to set up an intense cutaneous reaction—a much shorter period than is required in ordinary fresh-water vapor cabinets or Turkish baths —which is followed by prolonged, unconscious perspiration, even if the patient rests in a moderate temperature and covered lightly. This process may, however, be readily interrupted by the application of cooling douches and showers, which is the method usually employed, except with robust persons wishing an intense reaction. This profuse and prolonged perspiration is difficult to explain satisfactorily, but the fact that the vapor must exert a specific, highly stimulating action on the sweat glands cannot be denied by anybody who has given it a trial. The analysis of sweat shows it to contain *de norma* urea and fatty acids, derived from the cyan alcohols of the body (Latham), and in rheumatic and gouty subjects, uric acid, urates, albumin, and calcium oxalates (Halliburton). Through the copious perspiration produced by a vapor bath, large quantities of these waste products must necessarily be excreted from the body, consequently this intense cutaneous reaction is a most important source of elimination.

In the form of tub and pool baths the thermal waters act similarly, although, generally speaking, in a lesser degree of intensity, so that on the whole they may be considered as milder procedures. These baths are prescribed in many conditions for eliminating purposes as well as for their local action upon the skin, by which the surface circulation is increased, congested organs depleted and returned to their normal tone, and *materies morbi*, elements of retrograde metamorphosis and detritus of various kinds may be removed (Baruch). The stimulating and refreshing action of baths in general is familiar to everybody, and needs no further comment.

Two other factors to be considered in connection with a sojourn in Glenwood Springs are the altitude and climate. The former, with its invigorating mountain air, is, as Weber holds, conducive to improved assimilation and nutrition, the formation of blood, stimulation of the nervous and muscular systems to greater activity, increased tissue change, etc., all of which are desirable adjuncts in the treatment of many disorders. The delightful climate, with its numberless bright days, makes outdoor life and exercise pleasant, and tends to keep up the patient's *morale*. Therefore it is not surprising that a course of treatment, judiciously carried out on the part of physician and patient, should be productive of most favorable

results in lithemia and other diseases, when we consider the potent restorative agents that are active.

Gout and lithemia are so closely allied, both pathogenetically and clinically, that they might be regarded as modifications of an identical primary process, varying in degree of intensity, and in the character and localization of the secondary symptoms. Thus, for instance, if we superadd to a case of lithemia the characteristic arthritic symptoms and deposits, we have a typical case of gout before us. Several other facts indicate the close relationship of the two disorders, as, for instance: Lithemia is frequently a precursor of gout; a person after being for years a lithemic subject finally ends by having typical arthritic attacks and gouty deposits; many gouty subjects evince in the intervals between attacks a condition showing all the characteristics of lithemia; some of the atypical attacks (visceral) occurring in inveterate gouty persons resemble the paroxysms of lithemia most strikingly. In the pathogenesis of both diseases, anomalous metabolism is considered by many eminent authorities to play a most important rôle, being, in all probability, the primary cause.

The gouty patients coming to Glenwood Springs for the purpose of undergoing treatment being chronic cases, this form of gout will be especially considered in the following. Acute cases may be cared for with equal benefit at home, baths being contraindicated during the seizures.

The conclusions of Luff, recently published, that ordinary alkalies, lithium salts, piperazine, and lysidin are useless, and sodium salicylate contraindicated, in gout, are based on the results obtained from his experiments, showing that these drugs do not prevent the deposition or increase the solubility of the biurate. While these views are theoretically correct, they are not altogether corroborated by clinical experience, and many practitioners find some of these remedies very serviceable in numerous cases of gout. In the writer's hands the alkalies, especially sodium phosphate, have proved valuable therapeutic adjuncts, while the large majority of gouty subjects have been found to be intolerant to the salicylates, owing to the ensuing gastric disturbances.

The therapeutic action of chemical compounds in the form of mineral waters is indisputably much more powerful than in the solid state, and thus may be explained the greater efficacy of natural waters over these salts. The virtues of the alkaline sulphated waters have been recognized from time immemorial in the treatment of gout, both for internal use and especially bathing pur-

poses. The Yampah drinking-water is especially indicated in those cases of gout so frequently associated with gouty dyspepsia, gastro-intestinal catarrh, torpor and congestion of the liver and portal system (abdominal plethora), gouty glycosuria, and catarrh of the respiratory organs due to circulatory disturbances in the abdomen (K. Grube).

The action of the plain and especially the vapor cave baths in producing an intense cutaneous reaction, as well as the important part they play as eliminating agents of uric acid and other *materies morbi*, have been dwelt upon. The observation of a white coating of the skin, consisting principally of urates, which occurs in some gouty subjects after profuse perspiration, is additional evidence of the highly eliminating action of this structure. In general, the eliminating action of mineral water baths is accepted, and it is very probable that they exert a powerful influence in the prevention of gouty manifestations and the formation of uric acid. E. Pfeiffer's experiments show that after subjecting gouty patients to twenty mineral baths there was a diminution of 50 per cent or more of the uric acid excreted, whereas in healthy persons this remained virtually unchanged. Furthermore, baths may be of distinct benefit in the treatment of gout by relieving the kidneys; this is by virtue of their diuretic action, the amount of urine excreted being increased after a bath.

In cases of gout dependent on lead poisoning, or associated with diseases of the skin, such as chronic eczema, prurigo, acne, psoriasis, the beneficial effect of these sulphur water baths is most remarkable, and their action upon such cutaneous affections is indeed quite specific.

Our knowledge of the *modus operandi* of mineral waters and baths is still very limited. In spite of innumerable experiments demonstrating the contrary, there is no conclusive evidence of absorption of salts in solution by the skin, the positive results obtained by some observers being in all probability due to experimental errors (Wegele). On the other hand, it is unquestionable that absorption of gases and volatile substances takes place through the skin, which is of some, though of minor, importance in the action of certain baths. Thus, in the alkaline sulphated baths, the sulphureted hydrogen present is taken up by respiration and through the skin in small quantities, and acts as a stimulant to the respiratory and circulatory centers.

The presumption of a solvent action of mineral waters on gouty calculi and deposits has long been refuted. Niemeyer supposes the

favorable action of certain waters on gout to depend upon the reduction of plethora, due to a disproportion between supply and demand in the body (Walton). In a prophylactic sense, mineral waters and baths are probably serviceable in eliminating the sodium quadriurate circulating in the blood before it is transformed and deposited in the form of the biurate. In view of the fact that uratic deposits are found in unaltered living tissues, it is quite plausible to infer in a given case that the further deposition may be prevented before secondary inflammation sets in, and the formation of fresh crystals interfered with, by an appropriate course of treatment. The climate and altitude of Glenwood Springs are also extremely useful adjuncts in the treatment of gout by keeping the system toned up, capable of improved assimilation, etc. The selection of an appropriate climate is very important; elevated, dry, and warm places are beneficial to gouty subjects, whereas damp, cold climates generally disagree with them (Grube).

Regarding *diet* and *régime*, opinions differ so radically that it remains more or less a matter of personal experience and routine on the doctor's part as to his option of the course to pursue. The majority of authorities favor a regimen restricting the total amount of ingesta in order to promote metabolism. Others are still more rigorous, limiting the amount of carbohydrates and fats (in order to allow of thorough oxidation of the albuminoids), and the albuminoids especially (to prevent the excessive formation of uric acid), and prescribing a mainly vegetable diet, a great deal of exercise, and avoidance of certain foods and alcoholic beverages supposed to be conducive to the formation of uric acid. In some European spas the injunctions are carried out so strenuously as to measure and weigh the different ingredients of the patient's dietary, prescribing the distance to be walked daily, etc. In many cases these may prove of more theoretical than practical value, as many observers, including the writer, have had ample opportunity to convince themselves. In deliberating upon the appropriate course to be pursued in a given case, the patient's previous habits and personal experience, general condition, individuality, idiosyncrasies, etc., must be taken into account. The secret of successful treatment in gout lies more in using good common sense and individualization than in routine. In corpulent gouty patients a rigid restricting diet and regimen may be indicated, whereas in emaciated, cachectic cases, a more liberal, mixed diet is a *conditio sine qua non* to their recovery.

H. C. Wood aptly puts the question of diet, briefly stated, as follows: "There is no diet for gout. It is diet for the individual

before us. Some gouty patients are at once reduced if they take starch or sugar, while others have to take farinaceous diet to build up. The case may often be judged by the effects of experiment. A milk diet is one which probably suits the large majority of patients. A diet must be ordered according to the individual, but one that suits the individual, the stomach, the digestion, will suit or kill the gout."

Many patients are aware of what foods and mode of life agree or disagree with them, but have not the strength of will to deny themselves what they know to be injurious; by a little admonition on the part of the medical adviser they may be induced to practice abstinence or great moderation, as well as to follow out the prescribed regimen.

Some interesting experiments, showing the influence of the mineral constituents of meats and vegetables, respectively, on the solubility of sodium biurate, have been undertaken by Luff. The results obtained show that the mineral constituents of meat diminish the solvency of sodium biurate, whereas it is increased very considerably by those of vegetables. In a table the vegetables are arranged in order of their greatest solvent effect, beginning with spinach and ending with green peas. From these experiments Luff concludes that the mineral constituents of vegetables, if taken in sufficient quantities, would delay the advent of an attack of gout, and also exert a solvent effect on gouty deposits. From other experiments, showing that the mineral constituents of some vegetables delay the conversion of sodium quadriurate into the biurate, it is inferred that under favorable circumstances the elimination of the former might be secured without the occurrence of any precipitation of the biurate in the body. Luff suggests the use of a table salt prepared from vegetables instead of common salt, the former increasing the solubility of sodium biurate, while the latter diminishes it. Furthermore, Roberts found that sodium chloride, introduced into blood-serum containing sodium quadriurate, hastened the formation and precipitation of the biurate.

From the foregoing it would seem that the time-honored belief in the curative properties of a mainly vegetable diet in gout were based on more than empiricism, since it is corroborated by these experimental investigations. At the same time, it must be borne in mind that to consume the amount of proteid matter required for our nutrition, if taken in the form of a vegetable diet only, would necessitate the ingestion of such large bulks of vegetable food as to cause digestive disturbances in most cases. Therefore meat, being the

most concentrated and digestible form of proteid material, is indispensable in certain proportions, and the diet for the gouty should in general be a *mixed* one, with an abundance of fresh vegetables. Contrary to the belief of many, it will be observed that the excessive use of common salt is injurious in gout.

The above experimental proof of spinach ranking first among the vegetables exerting a beneficial effect on gout is a very interesting observation for the writer, who without knowledge of it has been for a long time a strong advocate of this vegetable for his gouty and rheumatic patients.

In conclusion, a word in regard to the *application of mineral waters and baths*. In the treatment of gout, as well as other diseases, by thermal waters, judgment and individual gradation must be exercised. Baruch believes that though water appears to be so simple a remedy, nothing in the entire materia medica demands a like judgment and care in its application. At Glenwood Springs, as at all other similar health resorts, the most baneful consequences have been observed through the injudicious conduct of certain headstrong patients, who follow some friend's advice, or take upon themselves to prescribe their own course of treatment, independently of a doctor's advice, or who act in opposition to his injunctions and warnings. By submitting to a moderate, on the whole liberal, regimen, conducted by a competent physician, all such dangers can be easily avoided, and the best therapeutic success insured.

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THE USE OF CASCARA SAGRADA IN HABITUAL CONSTIPATION.

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An examination of current medical literature would discourage the attempt to say anything upon the treatment of this condition. Scarcely a week passes that an article is not contributed to the periodical medical press upon the treatment of this disorder. Monographs have been written upon it, and it would seem that everything has been said that has any bearing upon its course and management. What is said in this article is not to be considered as an exhaustive study of constipation and its management, but rather as a note upon the value of a single remedy in this condition. We fully recognize that the condition is a mere symptom, having a variety of conditions underlying it; we recognize the necessity of investigating every case thoroughly to determine so far as possible the conditions which produce the disorder, and remove them. Diseases of the rectum play a not infrequent rôle in the production of this disorder, and this and other conditions must be fully met. Those in which the disorder is not due to a simple habit can only be permanently relieved by hygienic measures.

While all of the foregoing is true, and many writers tell us that laxatives are of little or no value in the treatment of this condition, we are convinced that in the future, as in the past, laxatives will be used and that they have a certain range of usefulness, particularly if combined with hygienic and mechanical means.

Cascara sagrada has been a popular drug in the treatment of this condition for years, but we think of late it is rather waning. The reason for this is found in the "improved" preparations which are found in the market. In our experience the various elixirs and tasteless extracts are quite useless; we have tried them all, and invariably returned to the old-fashioned, black, nauseous, and bitter fluid extract.

Next to the cascara, we think that the most popular prescription as a laxative is the pill of aloin, strychnine, and belladonna. There is no question of the efficacy of this prescription, but its use in the form of a pill requires a continuance of the same dose for a long time, and then a rewriting of the prescription with smaller quantities, which is usually followed by a prompt return of the constipation.

For more than twelve years past the writer has used, almost to

the exclusion of other drugs, cascara sagrada in the treatment of habitual constipation. He has always used the original fluid extract of Parke, Davis & Co., which contains all the nauseous and bitter properties of the preparation. In prescribing it, the patient receives an ounce of the fluid extract, and with it a dropper and some large-sized capsules. He is instructed to begin with fifteen, twenty, or twenty-five drops, according to the apparent necessities of the particular case. This is to be placed in the capsule just before taking. The dose is always given at night, and as the drug has a very slow action its effects are usually not noted until the following morning. The empty capsule is easily filled by the patient, and the nauseous effect of the drug is not noted. The dose is increased, if needed, by five drops each night, until the quantity is reached that causes a bowel movement; the drug is continued at this dose for a few days, and is then gradually reduced one drop each night until its administration ceases. For instance, if a patient begins with fifteen drops and increases five drops each night until thirty drops are reached, he would then be three days establishing the maximum dose. After a few days would begin a gradual reduction of one drop daily, and the administration of the drug would terminate at the end of thirty days. The administration of this drug in series in this way tends to overcome that tendency to relapse which is so persistent in cases of torpidity of the lower bowel.

Cascara sagrada is the only drug that stimulates peristalsis of the intestine and at the same time permits of a gradual lessening of the dose without marked decrease in its therapeutic effect. Used in the way here described we believe it is the most efficient medicinal means at our command in the treatment of habitual constipation.

THE RESECTION OF THE CERVICAL SYMPATHETIC IN THE TREATMENT OF EPILEPSY, OF BASEDOW'S DISEASE, AND OF GLAUCOMA.

BY DR. THOMAS JONNESCO, BUCHAREST.
(Translated by Willard Bartlett, A.M., M.D., St. Louis, Missouri.)

I published in January, 1897, a short article concerning complete bilateral resection of the cervical sympathetic in the treatment of Basedow's disease and epilepsy. I have performed this operation in fifty-four cases. In September, 1897, I did a resection in one case of glaucoma, restricting it to the superior ganglion, and have since repeated the operation seven times. Since August, 1896, I have operated upon sixty-one patients, suffering as follows: Forty-three from essential epilepsy; one from epilepsy and chorea; one from epilepsy and Basedow's disease; eight from Basedow s disease (in five cases the malady was primary, and in three secondary); one from Basedow's disease and glaucoma; seven from glaucoma.

In forty-two of these sixty-one cases I have performed the total bilateral resection, together with the removal of the cords uniting the ganglia; in one case complete unilateral resection and the removal of the two upper ganglia on the opposite side; in eight merely the complete excision on one side; in three resection of the two upper ganglia on both sides; in seven cases of glaucoma extirpation of the superior ganglion, six times on both sides, and once on one side only. Not one of my patients met death as a result of the operation.

Six epileptics died independently of the operation a longer or shorter time after the same, during an epileptic attack or as a result of an intercurrent acute disease. I have in various theses described the results attained, and the technique of the operation.

I will now, however, backed by these complete statistics, explain how much of the sympathetic must be resected, and attempt to describe the immediate and distant results of the procedure, as well as its therapeutic effects. I consider that the time has now arrived to grant to this new operation, performed by so many surgeons, the place due it among the praiseworthy feats of modern surgery. Imposing statistics, as well as numerous publications, speak for its importance.

I will limit myself to mention of the theses of Jaboulay and his pupils, of Abadie and Gerard-Marchand, of Quénu and Chauffard, Reclus and Faure, Soulié, Cerkez and Juvara, Gautier and Combe-

male, Thiviar and Boisson, whose inaugural dissertation, concerning resection of the cervical sympathetic in the treatment of Basedow's disease, has just appeared in Paris. I mention, furthermore, the observations of Tuffier, Chipault, Nicard, Ottero in Madrid, Donath in Budapest, Bayer in Prague, Launois and Jabralay, together with the inaugural treatises of Schopiro and Briaud, concerning the same operation in the treatment of epilepsy.

Lastly I cite the two cases of glaucoma, in which the sympathetic was resected by Abadie. He is, as far as I know, the only one who has performed in this disease the operation I have mentioned. His results, by the way, were very good.

How much of the sympathetic must be removed? Jaboulay believed that simple section of the cervical sympathetic cord was sufficient to suppress its physiological action. This is not so, however, because the cervical chain is composed of three ganglia, which in reality are not independent nerve centers, but which are in direct connection with cerebral and spinal foci, by means of communicating branches. The divided sympathetic cord, be the section between the superior and middle or between the middle and inferior ganglia, remains connected with intact ganglia, which maintain an unimpaired relationship to the spinal marrow, and to the various organs. They continue to influence, of course, these latter, whose functions we had striven to change by an operation on the sympathetic.

Concerning secondary degeneration of the sympathetic chain setting in after section of the trunk — a point to which Jaboulay refers in defense of the simple division of the same — Prof. G. Marinesco has determined that no such degeneration occurs; he did not succeed in finding cell changes in either the upper or lower ganglia after section of the sympathetic in dogs. The simple cutting is, in consequence, both insufficient and irrational. Only resection of the ganglia is in accordance with the teachings of anatomy and physiology. The extent of the operation must necessarily be determined in each individual disease.

Jaboulay's section of the sympathetic had been the only attempt of this kind in the treatment of Basedow's disease up to August, 1896. He performed it three times — in February, March, and April of that year. On August 17, 1896, I did the first bilateral resection of the superior and middle ganglia, together with the cord connecting them. On September 2, 1896, I did this operation a second time. Histories of these two cases were, in October of the same year, presented to the tenth Paris congress of surgeons.

Jaboulay undertook, on January 19, 1897, his fourth procedure

on the sympathetic in Basedow's disease—not as formerly, however, but exactly on the lines which I have laid down, viz., resection of the superior and middle ganglia. Since that time all the surgeons who desired to influence, through an operation on the sympathetic, the course of Basedow's disease, have done resection alone; and even Jaboulay, who published eleven cases, has performed my operation eight times, having simply divided the nerve only in the first three cases above mentioned.

Surgeons have entertained different opinions as to the extent of the operation necessary. Some have excised but a small portion of the superior ganglion and of the cord immediately beneath, some the superior and middle ganglia, and others the entire chain. At any rate, this principle of resection has triumphed over that of simple nerve cutting. Indeed, it seems to me that total extirpation is alone able to interrupt all sympathetic nerve impulses to the thyroid gland, to the eye, and to the heart, as far as acceleration is concerned. From the superior ganglion are derived the nerves for the eye; from the inferior ganglion the vasodilator and probably the secretory nerves of the thyroid gland. The same ganglion furnishes the cardio-accelerator branches.

It is, then, clear that excision of the superior ganglion alone is irrational, because this could only influence the eye. Convinced of this, I resected in all my eight patients, with the exception of the first two, the entire chain—seven times on both sides, and once on one side only. This operation is indeed a delicate one, but nevertheless harmless and easy of accomplishment—an exhibition of dissection on the living, which is not rendered more difficult by a goitre or dilated blood-vessel. It is advisable to take out one sympathetic chain at a time, and at the end of a week to operate on the second side. We desire in epilepsy to induce a complete change in the cerebral circulation, in that we transform permanent anemia into permanent hyperemia, thus improving the nutrition of the nerve cells, or flushing out toxic products contained within the same.

It is our object, on the other hand, in reflex epilepsy, to destroy the means of transmission of impulses which travel from the viscera to the brain. To attain this result some have undertaken simple section of the sympathetic (Jaboulay), some have confined themselves to partial resection—be it of the superior ganglion (Alexander Kümmel), the middle (Bogdanik, Tuffier), the inferior (v. Jaksch), or the inferior and middle together (v. Baracz).

Any one of these partial resections influences some of the vaso-

constrictor nerves in the brain. Resection of the superior ganglion inhibits vasomotor influences in the carotid region; removal of the lower does the same thing for the vertebral. It is then necessary to excise both of them, in order to bring about a complete vasomotor change in both these sources of blood-supply to the brain. Furthermore, the entire cervical sympathetic must be removed if one wishes to completely interrupt the conduction of visceral impulses to the intracranial centers. These were the facts which influenced me to the total bilateral resection, the only operation which in epilepsy, as well as in Basedow's disease, can be considered logical and reasonable.

V. Baracz stated at the Moscow Congress in 1897 that he had been the first to suggest removal of the entire sympathetic for epilepsy—that he had performed the operation before I did. In order to prove his claim to priority, in a note published in answer to the thesis which I mentioned at the beginning of this article, he brought forward a reference out of an old treatise which he had written in the Polish language. A study of the same shows that v. Baracz did really suggest total removal of the sympathetic as a means of preventing the conduction of impulses in reflex epilepsy, without, however, mentioning its vasomotor effect upon the brain. His article, because in a foreign language and in an obscure journal, was unknown to me when in 1896 I advocated and performed excision of all three ganglia. Moreover, I have nowhere seen a reference made to the same, and it is remarkable that the author, having made known his idea, should have had no opportunity to perform this operation. My proposition was essentially different. With me the vasomotor rôle was of chief importance, and the transmission of visceral irritation a secondary matter. It is seen from a perusal of v. Baracz's writings that he never did this operation at all, as the only case in which he says he resected the sympathetic was one in which the two lower ganglia were taken out during ligation of the vertebral artery. It is, then, clear that he did but a partial excision, and this one only by chance. The title of his article, and the fact that he only incidentally mentioned the sympathetic, explains why his case was unknown to me, and why I did not give him credit for his partial resection, when I made my report to the Congress at Moscow.

So much for v. Baracz's claim to having first proposed and performed total bilateral excision of the sympathetic for epilepsy.

Extirpation of the superior ganglion is sufficient in glaucoma, as it furnishes the single gateway for the passage for sympathetic

fibers to the eye and periocular tissues, with the exception of those which spring from the brain, along with the trigeminus, and accompany the same. Removal of the ganglion just mentioned destroys the function of the vasoconstrictor fibers, hence the dilatation of the arteries, the decrease in blood-pressure, and the lessened extravasation. The effect is the same upon the excitosecretory filaments, hence the decrease of aqueous humor. The iris-dilator branches are influenced in like manner, explaining the energetic contraction of the pupil, with consequent opening of the canals in the iris angle, and unimpeded escape of the aqueous humor from the eyeball. Furthermore, the nerves to the unstriped peribulbar muscles no longer transmit influences, thus allowing relaxation of them, together with removal of constriction from the emissary veins and the reestablishment of the normal return circulation in the eye.

We see herein the probable way in which the sympathetic causes the glaucomatous phenomena, and at the same time the mechanism of their disappearance, after resection of the superior ganglion. As regards the origin of the disturbances in glaucoma, I am of the opinion that it is a central one, located either in the brain or in the medulla, whence the ocular fibers of the sympathetic spring, combining later to pass through the superior ganglion. Excision of the same has no effect upon the primary focus of the disease, but simply intercepts the continuity of the medium which carries abnormal influences to the eye.

Now as to the postoperative manifestations. Among the temporary ones are congestion, warmth of the face, tears, nasal secretion, perspiration, increased saliva, and conjunctival reddening on the affected side. As permanent effects of the operation, irrespective of the disease for which it was performed, we have narrowing of pupil, paresis of the same, ptosis, and sinking of the eyeball within the orbit; all of these phenomena being due to a paralysis of the dilator muscle of the pupil, of the smooth muscles in the upper lids, and of those contained in Tenon's capsule.

Remote Effects of the Operation. — There are none; I have not observed the slightest trophic disturbance. The procedure has not the least evil influence upon the general or psychical condition; in fact, it clearly benefits the nervous state in Basedow's disease and epilepsy.

The therapeutic value of the surgery of the sympathetic has been as follows: Of the ten on whom I operated for Basedow's disease, six were cured, and four decidedly improved. The cures have a duration of 26, 25, 15½, 15, 7½, and 4 months respectively. All

of these were real cases of primary Basedow's disease, one being complicated by a bilateral glaucoma. The first change noticed after the operation is the immediate disappearance of exophthalmus, of nervousness, of heat-sensation, etc., while the patient enjoys at once a feeling of complete well-being. Later, the trembling, the tachycardia, pulsation of the carotids, and the goitre disappear. The pulse sinks from 140 to 70 or 80, and though it may at first often become rapid for short periods, it soon returns to the normal. Expansion, broué, and pulsation of the goitre gradually become less marked; the gland grows slowly smaller, until at the end of a period varying from a month to a year it has attained the usual size. A sort of sclerosis has taken place, and the lobes have become very hard. In two of the cases which I cite as cured, the two superior ganglia alone were excised; in the other four the whole cervical chain.

One true case of Basedow's disease, in which but a unilateral resection was made, improved considerably in four months; but the exophthalmus and goitre persist on the unoperated side. In my other three cases, which were decidedly benefited but not cured, the disease was of the secondary variety, because the goitre appeared much earlier than any of the other symptoms. The nervous condition was in all markedly bettered, as was the tachycardia, while the goitre remains as of old. The time since operation is in these three cases 5½, 5, and 4½ months respectively.

One is to conclude from what I have said that resection of the sympathetic is of use in just those cases in which enucleation of the thyroid is either fatal or without effect. The results in the secondary cases are, however, less satisfactory, and here operation on the thyroid might be of additional benefit. The statistics of Josef Sorgo show that these last are the cases especially favorable for enucleation.

One thing I wish to bring out clearly, which is that we must have patience if we would judge of the actual merits of these experiments upon the sympathetic. We must in many cases wait a long time for results, as manifestations of this disease disappear very slowly. I have dismissed patients completely cured in whom I had been for months in doubt as to ultimate results.

I have operated upon forty-five cases of epilepsy (one complicated by Basedow's disease). In forty-two of these I did the total bilateral resection; in one I removed all three ganglia on one side, and the two superior ones on the other. Seven cases were treated with complete unilateral excision, and one with extirpation of both

superior ganglia. Six patients died, either in epileptic attacks or as a result of an intercurrent disease. Of the remaining thirty-nine, one is too recent to be considered, while several others could not be followed after the operation. There remain, however, nineteen cases whose course I have carefully followed. Ten are cured—that is, no spasms have occurred for two years in five cases, for nineteen months in one case, for eighteen to fifteen months in three cases, and for six months in one case. Six of those upon whom I have operated are decidedly improved; two absolutely unchanged.

To sum up, 55 per cent of the operations resulted in cure, 28 per cent in improvement, and 15 per cent were without effect.

Chorea complicated one case of epilepsy, but the individual so affected has had no attack in two years.

The conclusion to be drawn from my experience is, that my method should be given a trial in all cases of epilepsy, even those of long standing, complicated with mania and dementia; and if, on account of organic changes in the cerebral cortex, this treatment be productive of no good results, still the critic cannot say that another operation has done more.

Brilliant results may be expected in incipient epilepsy, with or without mania, both as regards the attacks and intracranial activity. I wish to add that a scientific knowledge of the causes and varieties of this disease could furnish us with exact indications as to the particular cases in which much is to be *hoped* from a resection.

In glaucoma the operation has been invariably productive of good. I have performed it upon eight patients, one of whom had Basedow's disease and glaucoma at the same time. On this one I resected all six ganglia; on the others I limited myself to the superior ganglia, having in four cases removed both of them. In the remaining three I did the operation on one side only. With regard to the forms of glaucoma treated, one was acute, one of the chronic irritative variety, three of the absolute chronic irritative, and three more of chronic simple glaucoma.

The direct results of the operation were the following: (1) Lessening of the intra-ocular tension, especially in four cases; (2) a contraction of the pupil; (3) disappearance of periorbital pain; (4) cessation of the attacks in irritative glaucoma; (5) lasting improvement of sight and enlargement of the field of vision in those cases in which visual acuity was retained and atrophy not complete.

One case of chronic irritative absolute glaucoma was not benefited. I was really surprised by the rapidity of the progress in two chronic simple cases, and in one instance where the affection was of the

chronic irritative type. Double iridectomy had been made, but without result, in three of my patients.

Basedow's disease complicated one case of glaucoma; visual sharpness was so impaired that the man could hardly read the largest test type, while the fingers were scarcely distinguishable at a distance of forty centimeters. To-day, ten months having elapsed, his general condition is perfect; his vision is so improved that he now reads test types eight centimeters long at a distance of one meter, and that with the left eye, which was useless before the operation. With the right eye he can read at a distance of one and a half meters.

My second operation was on a woman whose left eye was entirely useless, but who could with the right count the fingers at a distance of fifteen centimeters. Nine months after a resection of the right superior ganglion she can see fingers when held 2.75 meters distant.

My third patient was from Hatzfeld, in Austria. His was a chronic irritative glaucoma, attended by headache and periorbital pains, which made life unbearable. These symptoms and sight, which had been failing for ten years, drove him to a double iridectomy, which was performed in Vienna without any benefit. In November, 1897, I resected both superior ganglia. The pain at once disappeared, and the sight is now so much improved that he reads and writes with ease. Eleven months has passed, and the patient is so delighted that he scarcely dares allow himself to believe that such good fortune can continue.

Resection of the sympathetic has been fully as satisfactory in glaucoma as in epilepsy and Basedow's disease. I cannot, of course, influence all cases, but my operation is proved to be absolutely free from danger, and should be given a trial in these most serious conditions, where *one* lasting cure certainly counterbalances a few fruitless trials.

Results, such as I have the satisfaction of recounting, must certainly convince even the most skeptical. Professor Panas was very conservative regarding the indication of this treatment in glaucoma, but he will now, I hope, put aside his reserve in this day and age when countless observations have proved that my operation can be of lasting benefit.

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BOOK REVIEWS.

THE PATHOLOGY AND TREATMENT OF SEXUAL IMPOTENCE. By Victor G. Vecki, M.D. Translated from the Author's Second German Edition. Philadelphia: W. B. Saunders. 1899.

The author in his introduction dilates upon the importance of the subject, as if it were not already abundantly recognized by the profession. The distinction between *impotency* and *sterility* is maintained. He gives Zessel's definition of impotency, and expresses some surprise that the definition is difficult, not seeming to recognize that the formulation of a negation in the terms of a positive proposition is always difficult.

There is a short chapter on anatomy, followed by one on the physiology of the sexual act. He says that the individual must have attained puberty in order to perform normal coitus. We think most writers will not agree with this statement, unless he should define puberty as the ability to perform normal coitus.

There is a qualified rejection of Hensen's physiological spermatorrhea, and the support given to it by Black, who states that he frequently found seminal filaments in the urethral mucus of healthy men, after alvine evacuations. His argument is based upon a study of three cases, in one of which the urine was examined for seventy-five days in succession. A curious observation of the writer is that the more frequent coitus, the more vigorous the spermatozoa. Continence gave the greatest number of dead and defective spermatozoa. This observation negatives the older writers, and is explained by him on the theory that the semen of coitus after prolonged continence is largely from the vesiculæ seminales, and that spermatozoids in that reservoir gradually lose their vitality.

The etiology of impotence is not adequately considered. Krafft-Ebing's schema of the neuroses attended by impotence is given. The discussion of sexual excess and its relations to debility and impotence is excellent. Excess is defined as coition for which an effort is required.

The larger portion of the volume is devoted to a consideration of the forms of impotence, its prognosis and treatment. There are no medical topics which call for a greater degree of common sense in their discussion than these, and it is from this standpoint that the work can be so heartily commended. Scores of quotations might be introduced, but one must suffice. Speaking of degeneracy in relation to the sexual organs, and of those who regard perversities in sexuality as of late development, the author says: "Man, as an animal gifted with reason, has reached special excellence in various spheres. In many a province of knowledge and art he has left marks of his inventive genius. In most things it took him thousands of years to lay open the secrets of nature. He possesses quite perfect knowledge of the means of abuse of his sexual power, and he knows how to commit all kinds of sexual excesses. This knowledge he acquired at so early a date that even the very oldest monuments of human culture tell of it as something that had existed since the most remote antiquity. Modern culture, in spite of all the lamentations of tiresome, old, or hypocritical moralists, is not to be blamed for the almost universal abuse of the sexual power. This

has been transmitted to us, like many other detrimental inheritances, by preceding ages, and our time suffers under it neither more nor less than it does from many other bad qualities. The only merit that can be claimed by our present time is that we have laid bare and shown in its true light the weakness of man in committing excesses in venery."

The work is well issued by the publishers, but would be improved by a few illustrations. It is readable, though the diction is of a decidedly foreign character.

THE PRINCIPLES OF BACTERIOLOGY. A Practical Manual for Students and Physicians. By A. C. Abbott, M.D. Fifth Edition. Philadelphia and New York: Lea Bros. & Co. 1899.

In preparing this work the author has evidently kept clearly in mind the needs of the student and practitioner of medicine. The importance of the subject needs no emphasis at this time, as it is through the practical application of the principles applied in the study of microorganisms that the remarkable advances in dealing with the infectious diseases are based.

The work before us is a condensed text-book in which short statements abound and in which very little discussion of mooted questions is found. The first part of the work deals with the principles of bacteriology. In it we have a description and definition of bacteria, the principles of bacteriology and culture, the preparation of culture media, methods of staining, and the means of identifying various organisms.

The second part deals with the application of bacteriology to a study of the more important species concerned in the production of disease. This portion of the work closes with a short but excellent discussion of immunity, bacteria found in water, and methods of testing disinfectants and antiseptics.

We know of no work in English which so perfectly meets the requirements of the beginner in this branch of medical science. There is not a line in the entire work in which the slightest obscurity is found, in this respect differing markedly from some recent volumes dealing with bacteriology and biochemistry. The simplicity of the author's descriptions especially recommends the work to those who desire to obtain some knowledge of the subject and who are unable to avail themselves of a well-kept laboratory and the services of a teacher.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. By Hobart Amory Hare, M.D. Volume II, June, 1899. Philadelphia and New York: Lea Bros. & Co. 1899.

In our review of the first volume of Progressive Medicine, which appeared in March of the current year, we commented favorably upon this publication, and stated that if the later volumes sustained the promise of the first that it would meet with a favorable reception on the part of the profession. The second volume is supplied by four contributors. William B. Coley discusses the surgery of the abdomen, including hernia. He gives unqualified support to the value of drainage after abdominal operations, particularly in cases where there is infection. The value of rubber gloves in abdominal surgery, as well as general surgery, is discussed. The method of opening the abdomen is studied with reference to certain leading articles upon that subject. The liability of

hernia after abdominal incision makes this question of greater importance than has been generally believed. Surgery of the stomach, though occupying but about twenty pages, contains practically all that has been contributed in the past year to this actively developing field of surgical research. Operative treatment of gastric ulcer and the total removal of the stomach are adequately noticed. In the surgery of the gall-bladder and gall-ducts, Halstead's additions to the technique of duct suture are principally discussed. Mechanical aids in intestinal anastomoses includes a description of Halstead's rubber bags and Laplace's forceps. Treves is quoted as still adhering to the Murphy button. The technique of herniotomy is extensively discussed and includes a description of Fowler's operation and Bloodgood's method of transplanting the rectus muscle. Appendicitis, laparotomy, and malignant diseases of the rectum close the chapter.

We have reviewed this first chapter *in extenso* to show the ground covered by the writer in 140 pages, and to show that it is not a monograph, but a discussion of what the author believes to be the most important recent contributions in that field.

The three remaining chapters deal with gynecology, by John G. Clark; diseases of the blood, including ductless glands and the lymphatic system, by Alfred Stengel; and the closing chapter on ophthalmology, by Edward Jackson. These chapters are cast upon the same lines as the one dealing with surgery, and contain the more recent literature, reviewed in a masterly manner.

THE ANATOMY OF THE CENTRAL NERVOUS SYSTEM AND ALL VERTEBRATES IN GENERAL. By Prof. Ludwig Edinger. Translated from the Fifth German Edition by W. S. Hall, Assisted by P. L. Holland and Edward P. Carleton. Philadelphia, New York, and Chicago: The F. A. Davis Co.

For a number of years the work of Edinger in its successive editions has been the favorite of students desiring a knowledge of the anatomy of the nervous system. It is practically impossible to arrive at a proper conception of the human brain and nervous system except by embryological research. This last edition of Edinger is, like the former, divided into three parts. The first is an outline introduction to the entire nervous system, with a review and history of methods of investigation of the central nervous system, which is completed by a description of the ganglion cells and nerves.

Part II deals with the embryology and comparative anatomy of the vertebrate brain. It describes the development of brain and of ganglia, spinal cord, pons cerebellum, thalamus, and cerebrum. Part III deals with the special anatomy of the mammalian brain, with special reference to that of the human.

The present volume is a worthy successor to those which have preceded it, and while it has been considerably enlarged, the same simplicity of arrangement and clearness of description which marked the earlier editions are apparent in this one. In the matter of neural nomenclature, the author pursues a middle course, not going far enough in the direction of proposed changes to throw the work out of line with current medical literature, nor adhering to many of the grosser errors which characterize the older terms. The "neuron" theory is adequately considered, but that too much importance is not attached to the series of stains upon which this theory is based is shown by a statement which the author makes of the imperfection of our present methods admitting too easily of false conclusions. But the observations of experimental pathology

teach that if a ganglion be diseased or injured, the changes will not be propagated farther than the processes of that cell reach. Our present knowledge teaches that ganglion cells are not directly joined with any other. It must be mentioned, however, that close observers have repeatedly described links of connection between different cells.

There is an index of authors of comparative neurology and a general index. The work is well printed, but many of the cuts have been used too long, and consequently their outlines are somewhat marred, though their usefulness as illustrations is not thereby impaired.

PRACTICAL DIAGNOSIS. The Use of Symptoms in the Diagnosis of Disease. By Hobart Amory Hare, M.D. Fourth Edition, Revised and Enlarged. Price, $5.00. Philadelphia and New York: Lea Brothers & Co. 1899.

In the March, 1898, issue of MEDICINE we reviewed the second edition of Dr. Hare's work and called attention to its many points of interest. In but little more than a year a third, and now a fourth, edition has been made necessary. The third edition appeared in September, 1898, and we are informed that it was exhausted with such unexpected rapidity that this fourth edition was made necessary. So short a time having elapsed between the third and fourth editions, it was thought no revision of the text would be needed, but the author has seized the opportunity to insert new illustrations and such additions to the text as would make the volume more valuable.

Like the former editions, the present volume does not aim to be a complete treatise on physical diagnosis, but rather to present a practical and scientific method of studying disease from the standpoint of symptoms. From this standpoint the work is of very great value and is especially useful to the beginner in clinical medicine. By it he obtains a concrete idea of the relation of symptoms to disease and to changes in special organs. Necessarily, some things are omitted which are of interest to the laboratory worker, but there is practically nothing left out which is of value at the bedside.

ELECTRO-HEMOSTASIS IN OPERATIVE SURGERY. By Alexander J. C. Skene, M.D., LL.D. New York: D. Appleton & Co. 1899.

The first 135 pages of this small work deal with electro-hemostasis; the remaining two chapters are devoted to sepsis and antisepsis in surgery, with a special chapter on hospital construction and management. The originality of the suggestions regarding electro-hemostasis, and the extent to which the author has employed it in gynecological surgery, give the chief interest to the book. The author states that he was led to devise electro-hemostasis by the unsatisfactory results following the use of both silk and catgut ligatures. The risk of infection with the latter, and the danger from a non-absorbable foreign body in the peritoneal cavity where silk was employed, have led to the extended use of this new method. He points out that in electro-hemostasis there is not a charring of the surface, but that the tissues are condensed and agglutinated and their blood-supply completely cut off. According to the author, this method is a desiccation of the tissues, and all vessels are firmly occluded. The end of an artery or the stump of a pedicle, when so treated, resembles parchment in gross appearance; the thickness depending upon the size of the vessel or tissue treated. The end of an artery is reduced to a line in thickness, and an ordinary broad ligament artery to less than an eighth of an inch in thickness. A broad ligament is in this way rendered translucent and

structureless, and at a glance the surgeon is able to tell if the operation has been incomplete or if vessels remain unclosed. Vessels are closed by the complete fusing together of the walls so that they cannot be parted. In his earlier work he feared that moisture might open up the occluded vessels, but an abundant clinical experience shows that this accident never occurs. An excellent study of the microscopical appearances in electro-hemostasis is given. An examination of the work shows an astonishing versatility in adapting the methods to gynecological operations, which include everything from ovariotomy to hysterectomy. There is a brief description of a hemostatic hemorrhoidal clamp and of the use of the electrocautery in the treatment of urethral affections in women.

While some of the work of Professor Skene upon this line has been published in the periodical medical press, yet he has performed a valuable service in putting the entire method in all of its details before the profession in the form of a monograph. The work is illustrated by a large number of plates, the most of these being half-tone reproductions of original drawings, diagrammatic in character.

Diseases of the Ear, Nose, and Throat, and Their Accessory Cavities. By Seth Scott Bishop, M.D., D.C.L., LL.D. Second Edition, Revised and Enlarged. Chicago: The F. A. Davis Co. 1898.

The first edition of Bishop's work appeared in 1897. In a little less than two years a second edition is called for, which has evidently been carefully prepared, and the size of the work has been considerably augmented. The present edition has been increased about one-fourth in size, much new matter has been added, and a considerable number of additional illustrations introduced into the text. Comparatively little space is devoted to descriptive anatomy, except in so far as it is necessary to illustrate surgical relation. An examination of this second edition confirms us in the belief that the writer has produced a most excellent and compact treatise upon diseases of the ear, nose, and throat. Above all it is practical, and is especially adapted to the needs of the general practitioner. The work is well printed and handsomely illustrated. The diction and syntax in many places could be improved; there is a redundancy of expression that ought not to be found where an effort has been made to compress as much as possible into a comparatively small book.

Atlas of Diseases of the Skin. By Professor Dr. Franz Mracek. Edited by Henry W. Stelwagon, M.D., Ph.D. Price, $3.00. Philadelphia: W. B. Saunders.

This work belongs to the series of hand atlases published by Mr. Saunders, each volume of which contains from fifty to one hundred colored plates. They are an attempt to furnish clinical instruction in book form, and go as far as illustrations can in this direction.

In the work under consideration the plates are accompanied by a descriptive text of 191 pages dealing with the more common disorders of the skin, and especial stress is laid upon the methods of treatment. A number of prescriptions are given, and it forms a brief but succinct account of skin diseases which will be found of use to the student and the general practitioner. The chief interest in the volume is found in the plates, which include thirty-nine full-page half-tones and sixty-three lithographic reproductions. Each plate is preceded by a short clinical history.

EDITORIAL COMMENT.

REST-CURE TREATMENT.

The brilliant results which have attended the systematic application of the rest cure devised by Weir Mitchell have led to the extensive employment of this method in treating a great variety of nervous affections. Some hospitals, and most sanitariums, have special arrangements for carrying out the details of the cure, and here and there are found institutions in which the rest cure is alone employed in the treatment of disease. There is a growing opinion among the profession, who are not specially critical in their study of nervous diseases, that a nervous patient should be treated by the rest cure. These views and the facility with which they are carried out are leading to an indiscriminate application of the measure. It is employed in many unsuitable cases in which no benefit is derived, or positive harm is done. Already one meets with an increasing army of neurotics who enter the consultation-room and preface their interview with the request that the rest cure be not recommended; that they have been through it and were not benefited. This failure to employ a valuable means with some discrimination may result in throwing discredit upon a useful means of treating certain well-selected cases. Mental diseases, particularly melancholia, are rarely benefited by this treatment, and in many cases the seclusion and opportunities for introspection which it furnishes are sufficient to deepen the melancholia or to carry those who were upon the borderline into the realms of well-marked insanity. In melancholia, or other mental disturbance which has followed a comparatively abrupt failure of the general health, benefit may be reached by the treatment. In the vast majority of cases, however, it is contraindicated in mental diseases and particularly melancholia.

There is a vast army of neurotics whose cases are actually made worse, or at least no benefit is derived from the treatment. These include a great number of the hysterical, hypochondriacal, and that type of neurotics who are well fed, quite fat, and whose digestion is good and whose ills are a great comfort to them; who derive pleasure from being waited upon by other members of the family, and have a morbid craving for sympathy which must be gratified at all hazards. Perhaps something can be done for this class, but the rest cure is of no sort of value in the treatment of them.

The rest cure is of value in that class of cases in which the nutrition of the body is below par—those cases in which there has been a failure in the appropriation of food or an increased waste. The benefit to be achieved by the treatment is proportioned to the shortness of time since the general health failed, and largely to its degree. In its essence the method is a means of rapidly restoring exhausted nerves by furnishing them with a nutritious blood-supply.

MEDICAL PEDAGOGICS.

Medical teaching is in a transitional state. A half-century ago medical colleges were organized, and to some extent are to-day, for the purpose of furnishing clinics and titles for the professors. Positions in the institutions were largely sought for the purpose of exploiting a man's individuality and to furnish a stepping-stone to a consultation practice. Students and medical teaching were a necessary adjunct to this state of affairs, but the teachers were more largely interested in building up their own professional reputations than they were in the success of medical instruction; only so much attention was paid to the latter as the circumstances of the case absolutely required. The general advance of pedagogics has turned a flood of light upon the methods of teaching in our schools and especially medical colleges, and there is beginning to be a thorough examination of the methods of instruction as applied to undergraduates. The endless repetition of the same lectures year after year, whether clinical or didactic, in the gigantic amphitheaters, is beginning to be questioned as a valuable means of instruction, even though it is conducted by a man with a world-wide reputation and who commands fees of four figures for an ordinary operation. Many such clinics have been justly characterized a vaudeville, pure and simple. With the advent of the graded system, the breaking up of the large classes, and four years of study, many questions have crowded for solution and have been actively discussed. How shall the hours of study be apportioned? How much shall be devoted to laboratory work, recitations, clinical, didactic, or practical instruction at the bedside? What shall be the unit of work for the student, and shall several subjects be carried on in parallel courses, or is it wiser to study only a few subjects, devoting practically all of the time to them, and then pass to something else? These are some of the questions which are pressing for solution and which are demanding some of the best thought in the profession. For years normal schools have been established throughout the country that have for their

special object the training of teachers. Medical education, however, is one that seems to require no such study, and all that is necessary is to choose a man who has a reputation as an operator or diagnostician and place him in a professorial chair. Unquestionably, there will always be a place for men of the highest technical skill in medical education, but we seriously doubt the necessity of undergraduates receiving instruction from the leaders in the profession. They are not fitted for it, and they do not need it. To a much larger degree than now prevails medical teaching should be imparted by men who devote their attention solely to the business.

"HINTS" FROM HOMEOPATHIC PRACTICE.

It is with pleasure that we quote the *Homeopathic Envoy*. This journal is published "for the propagating of the true medical faith." We derive more inspiration from the hints than from any other part of the *Envoy*, and we are told in the June issue that the array is from many sources; from "Hahnemann's Materia Medica Pura" and the "Chronic Diseases;" from the old and new books of Homeopathy; from old journals and from current periodicals; and from pointers given by physicians—all of them, we are informed, have reasonably good authority back of them, and taken as a whole are reliable. The *Envoy* does not inform us that they have taken them as a whole, and, indeed, the brief nature of "hints" could hardly be expected to comprehend the whole of so exhaustive a work as a materia medica. We trust the acumen of the *Envoy* is sufficient to always separate the wheat from the chaff, granting that there is any of the latter in the "Pura" or the "Chronic Diseases." We think that this must be an inadvertence on the part of the *Envoy*, and that the hints which are unreliable must come from current periodicals or from modern physicians; the *Envoy* would hardly admit that the inspired Hahnemann was guilty of an unreliability.

"Tired of life; despondent; thinks nothing undertaken will succeed; thoughts of suicide, so profound is the depression—these are mental symptoms calling for *aurum*." To our minds, this proving is rank heresy from a *similia similibus curantur* standpoint. Gold does not make persons tired of life, despondent, nor think of suicide, but on the contrary is inclined to make them joyful, buoyant, and hopeful, with thoughts of success. Therefore the administration of a large dose of gold is calculated to relieve mental depression rather than to aggravate it; consequently it is *contrara*, *contrarus curantur*, and allopathic. No! the real homeopathic precious metal to give in these cases is 16-to-1 silver.

Further on we read: "Intense despondency and breakdown, following great financial losses, has been remedied by *aurum* 6th or 30th." Here again is rank heresy. Prescribing gold for a financial breakdown! a thing that never caused such symptoms. No one breaks down financially from too much gold.

"Feels better when constipated," is a symptom which we are informed is cured by *calcarea*. Why one should want to cure such an agreeable symptom as this is beyond our comprehension. Any one who feels well when constipated should certainly be permitted to go on his way rejoicing.

A TRAGICAL MISTAKE.

The Montreal press reports one of the most painful professional misadventures that has come under our observation for years. It is stated that a woman had accidentally wounded an eye with a pen-knife. The eye was sightless. A sympathetic trouble began to show itself in its fellow, and removal of the injured eye was decided upon. Through a mischance, after the anesthetic was given, the surgeon removed the sound eye, and now vision is totally gone. This is not the first instance of this kind that is to be found in medical literature. It emphasizes the necessity of guarding against such a blunder. An eminent ophthalmic surgeon of our acquaintance was invariably in the habit of marking, at the time of the examination, with an indelible pencil on the forehead of the patient above the eye to be operated upon. While such a practice seems superfluous in many cases, yet the rare occurrence of such a fearful accident shows that nothing that would prevent it should be omitted.

THE CHRISTIAN SCIENCE CLAUSE IN THE ILLINOIS MEDICAL PRACTICE ACT.

Some criticism has been leveled at those who urged the passage of the late medical practice act for the State of Illinois, particularly in reference to the clause which seemed to permit the practice of Christian Science. There are no charlatans who excite the contempt and derision of medical men to the same degree as this most recent fad. To those who have not given much attention to the laws regulating the practice of medicine it seems very easy to place a law upon the statute books which will suppress this and other practices. A dilemma which the committee was called upon to face as soon as it reached Springfield was the definition of medical practice. The old

act, and the new one, said that any one should be considered as practicing medicine who prescribed for or operated upon the sick. In the bill it was expressed repeatedly that this operating upon and prescribing meant the use of material remedies and appliances in the treatment of disease. The bill was drawn so as to require a certain standard of attainments in those who advertised themselves as physicians and who operated upon and prescribed for the sick. If the committee had been prepared to admit that Christian Scientists were practicing medicine within the meaning of the act, then it would have been possible to force them to comply with its provisions. The committee would not admit any such proposition, and were disposed to deny that Christian Scientists were practicing medicine.

As to the rights which are supposed to be conferred by this act, it confers no immunities or privileges that are not inherent in the constitutional rights of the citizen. It is the privilege of any one to hire a person to sit with their back to them, to pray for them, or to repeat in endless succession a formula supposed to be efficacious in exorcising disease or evil spirits. This is a common law right, and its mere statement in statutory form does not take from or add to it in any way.

THE USE OF FOOD PRESERVATIVES.

The senatorial food investigating committee has attracted renewed attention to the use of food preservatives. The question has furnished subject for comment by the medical press throughout the United States, and widely varying opinions have been expressed as to the harmfulness of food preservatives. Some American writers take the ground that boric and salicylic acids, even when contained in considerable quantity in foods, are much less harmful than the occasional presence of the ptomaines of putrefaction which sometimes develop if they are not used. The French law on this subject regards the addition of any preservative to food as deleterious, on the ground that any such substances must inhibit the action of the gastric juices and thus delay digestion. This rule will not meet the approval of most therapeutists.

That the subject is a complicated one is shown by certain testimony before the committee at Chicago, where one expert testified that while he believed the addition of large quantities of antiseptics to food was in the main deleterious, yet there were certain foods in which it was a distinct advantage. He spoke of catsup, which was ordinarily sold in a package of sufficient size to last a small family

for several days, and even longer. If no antiseptics were used in its preparation, as soon as the bottle is opened fermentation is set up and the contents are soon spoiled. This condiment, he claimed, was used in small quantities, and the amount of salicylic acid or other antiseptic that any individual would obtain was inconsiderable. This reasonable statement of the value of antiseptics shows that no sweeping general rule can be applied in prohibiting the use of such substances. That the extensive use of such substances is harmful there can be no question, when we read that certain samples of butter were found to contain from sixty to eighty grains of boric acid to the pound. The whole subject of food preservatives must be carefully studied and their harmfulness or value be accurately determined.

THE EDUCATION OF PUBLIC HEALTH OFFICERS.

The State of Vermont has organized a school of instruction for health officers, which is to be held from July 10 to 15, at Burlington. We have always looked upon the medical profession in relation to legislation and the public health as largely educational and advisory. So far as individuals of the medical profession hold executive offices, they must perform the services required of them. The self-appointment of the profession as a keeper of the public health and a general advocator of medical legislation, we have always thought to be detrimental to the best interests of the profession and the public. As an adviser and an educator, the profession will find ample scope for the exercise of such public spirit as it may feel incumbent to show.

The movement which is inaugurated in Vermont is along correct lines, and it would wisely be adopted by other States. The splendid work done in Michigan in their sanitary conventions held in different parts of the State is another educational work of great value, and one which forms a useful adjunct to the sanitary forces of the State. The movement in Vermont is especially a school of instruction for sanitary officers. There is no reason why every State board of health should not establish a similar one.

THE VALUE OF THE MURPHY BUTTON.

This device has been before the surgical profession for a number of years and has called forth widely varying opinions of its value in intestinal anastomosis. Many writers are of the opinion that it is no improvement upon older methods; others, again, think that it

marks a distinct advance in the technique of abdominal operations. The time that has elapsed since it was first exploited has been sufficient to relegate it to the limbo of discredited procedures if it were devoid of merit. The fact that at the present time the discussion was never more active regarding the value of this procedure, and that it numbers among its supporters some of the leading surgeons of the world, is sufficient to test its value. Surgeons in foreign countries have devoted more attention to the subject than have our own, and the use of this device is enthusiastically urged by some of the leading operators of Germany, France, and Italy.

The use of the button is found to be not devoid of complications, as it is frequently retained for weeks and months, and it sometimes causes obstruction. It would be surprising if the device were universally successful, and if it were, this alone would stamp it as a unique surgical procedure. That the button has come to stay, as a recognized surgical appliance in abdominal surgery, there can be no doubt. Notwithstanding the enormous amount of experimental work that has been done upon these lines, no satisfactory substitute has yet been obtained. While many operators are able to get along without it, and probably achieve equally good results as those who use it, yet this does not show that the button is of no value.

ALDERMANIC VERBIAGE.

The Board of Aldermen in New York were recently guilty of a curious verbal blunder which finds its counterpart in the celebrated advertisement: "A piano for sale by a widow with carved legs." The "whereas" of the Board of Aldermen states that "The practice of healing and curing the sick by unlicensed persons in the city of New York has become an evil which should be stamped out." It was probably not the intention of the worthy Board to state that the healing and curing of the sick was an evil, even if done by unlicensed persons, but that was in effect what they did say. If the unlicensed persons are guilty of healing and curing the sick in the wholesale manner as set forth in the "whereas," then the quicker they are licensed and are taken into the medical fold, or else replace it wholly, the better for the community. When the Board of Aldermen adopt another "whereas" we would respectfully offer the following: "Whereas, the pretended curing and healing of the sick by unlicensed persons in the city of New York has become a serious evil and menace to the public health, and a frequent means of obtaining money unlawfully, ——."

THE ARMY CANTEEN.

The pernicious reformer is abroad in the land. This time the field of his special activity is abolishing the army canteen. This peculiar institution has excited the opposition of the temperance reformers, and at the last session of Congress a law was passed which it was thought in effect would abolish the canteen. A ruling of the Attorney-General has saved the institution, although it has made it necessary that the canteens should be conducted by persons not connected with the army. Such an outcome was to have been expected when one considers the rabid manner in which the pernicious reformer goes about regulating things. That there were some evils connected with the canteen is undoubtedly true, but there is much that can be said in its favor, and under strict military supervision it was devoid of many of the serious evils incident to the patronage of saloons and low groggeries, which had grown up about our military posts.

The canteen is the club of the soldier; it is his place for social recreation, and in it he obtains relaxation which seems to be essential to physical well-being. If the canteen is to be abolished, it is incumbent upon the reformers to replace it with something that will supply the social features now furnished by the canteen. If this want can be met by dispensing root-beer, ice-cream soda, and lemon phosphates, we have no doubt that the reform will be a good one; but if it means that the canteen is to be replaced by low drinking saloons in the neighborhood of our military posts, then reform in this instance, as in many others, moves backward like a crab.

THE STANDARDIZATION OF DRUGS IN THE FORTHCOMING REVISION OF THE PHARMACOPŒIA.

If the medical press has any weight in shaping the policy which shall govern the committee of revision of the new Pharmacopœia, it would seem that the question of standardization had already been settled. Scarcely a publication throughout the country but has commented upon the necessity of improving our standards for the Pharmacopœia, and not one has spoken in terms other than urging the most radical departure along these lines. Nothing can be more significant than the departure in this respect from the attitude taken ten years ago, when the same question was urged. Since that time there has been a deepening distrust of the value of treatment with drugs, and mere empiricism has been falling to the rear, and there has been a growing effort to use remedies of precision in a scientific

way. At no decennial revision has the necessity of radical changes confronted the committee with as much force as at the forthcoming meeting. Not only will the question of standardization have to be met and settled, but if the Pharmacopœia is to be kept abreast of scientific medicine, there will have to be a recognition of a larger number of remedies than were ever before introduced. There must also be an elimination of many formulæ and substances which have fallen into innocuous desuetude. The committee must eliminate much that is useless and obsolete, and the difficulties in taking out will be quite as great as in adding to.

JOURNALIZING TRANSACTIONS OF STATE SOCIETIES.

At the last meeting of the Illinois State Medical Society the Executive Committee directed the officers of the Society to publish the transactions of the meeting in the form of monthly instalments. This is in effect adding another medical journal to the long list of publications. While in the interest of medical journalism every new publication is to be deprecated, yet we regard the new departure as distinctly in the interests of the Illinois State Medical Society. The difficulty of keeping the members in touch with each other and with the officers of the Society is such as to make some such publication as this absolutely necessary. The scope of the new journal will be largely restricted to publishing the transactions of the Society, and such current comment as the officers may think necessary. It will pay special attention to district and county medical society news, and it is hoped that it will prove a valuable means of increasing the interest and enlarging the membership of both the local and State societies.

THE ANESTHETIST AS A SPECIALIST.

We have often referred in these pages to the deplorable lack in American hospitals and schools of skilled anesthetists and the want of experience in the administration of anesthetics. That some deaths are to be attributed to their unskilful administration can hardly be questioned. It is gratifying to have the position which we have so strenuously maintained confirmed by D. H. Galloway in the *Philadelphia Medical Journal* of May 27, 1899, who says that much practice is necessary to accomplish anything requiring so much concentration of attention and such judgment as is necessary to administer an anesthetic. The success of the anesthesia and the safety of the patient continually hang on the judgment of

the anesthetist, and any lack of attention may result fatally. Decision, requiring quick and accurate judgment, must be based on a complexity of symptoms which is appalling to the inexperienced. The anesthetist must know the condition of the patient, watch every respiration, and be instantly aware of any intermission or change in its character.

From the standpoint of the operator, there should be trustworthy anesthetists, as the surgeon cannot operate as well if his attention is at all directed to the anesthesia, and it is not infrequent for the operator to be more concerned about the anesthesia than he is regarding the results of his own work. An operation may be practically devoid of danger, while an anesthetic is never administered without imperiling the life of the patient.

CHICAGO AS A MEDICAL CENTER.

Since classic times it has been held that it was the duty of those who were taught to in their turn become teachers, so that knowledge might not perish from the earth. The pupil became teacher, and thus was knowledge kept alive in the world from generation to generation. In the classic period it was generally deemed undignified for the teacher to be compensated by the pupil, and we find to a large extent the ancient spirit governing medical instruction in the great modern city at the head of fresh-water navigation. According to catalogues issued in 1898, there were 572 men who held full professorships in colleges held to be in good standing in Chicago. These figures take no account of a few institutions whose standing is so notoriously bad that they are unable to meet even the modest requirements of the State Board of Health. In addition to the splendid list of professors there are 328 instructors, assistant professors, and demonstrators. To these may be added ninety-six who are clinical workers in college dispensaries, the sum total being 996 engaged in more or less active college work. Nowhere else in the world can be shown an equal self-denial and self-sacrifice by a body of men in the advancement of human knowledge. The number named exceeds the membership of the Chicago Medical Society and includes nearly one-third of the entire local profession.

THE ACTION OF DIASTASE IN THE STOMACH.

The older physiologists taught that the action of ptyalin upon starch was immediately suspended when it reached the stomach. This view was largely based upon the experiment of mixing saliva

with starch in a test-tube and then adding artificial gastric juice. That a test-tube does not represent the living organ has long been contended, but it remains for a recent writer, A. E. Austin (*Boston Medical and Surgical Journal*, June 29, 1899) to demonstrate that hydrochloric acid combined with the albuminous substances does not stop the action of diastase upon starch. He has practically demonstrated that the larger part of the starchy food we eat is digested in the stomach by the action of ptyalin and saliva, before the free hydrochloric acid of the gastric juice presents its appearance and accumulates to the point where it hinders the digestion of starchy food. This is true of starchy foods taken alone, but if a certain quantity of albuminoid is ingested at the same time, then the hydrochloric acid combines with the proteid, and in this state has no action upon the diastase. He states that the combination of hydrochloric acid with albuminoids is affected, whether they be of animal or vegetable origin.

The value of these conclusions cannot be overestimated, as they give a scientific basis to the empirical belief of the value of diastase in the treatment of starch indigestion.

THE IMPORTANCE OF SPECIALISTS IN PUBLIC INSTITUTIONS.

An examination of the children in our deaf and dumb institutions shows a surprising number in which treatment of the ear results in a definite gain in hearing. Jousset, in a recent communication, states that out of twenty-two children, five were found to be suffering from deafness that would yield in some measure to treatment. Of these, three were so far improved as to hear ordinary conversation. What is true of institutions for the deaf is probably true of other public institutions. Where large numbers of patients are gathered together, there is an opportunity for the specialist. Every large public institution should have an attending staff which should include the various medical and surgical specialists, who would visit and examine the patients as frequently as is required for the good of the service. A few institutions have what are known as "consulting staffs." When one inquires what is accomplished by these staffs, it usually amounts to a few perfunctory examinations and to one or two visits to the institution during the year. For the most part the position of the "consulting staff" is not regarded as carrying with it any duties or responsibilities. There is a place in public institutions for the specialist, but he should have definite duties assigned him, assume certain responsibilities, and receive adequate compensation for his services.

ABSTRACTS.

MEDICINE.

The Determination of the Size of the Heart.—

F. H. Williams (*Boston Medical and Surgical Journal*, June 29, 1899) determines the size of the heart by the distance of its borders from the median line. This is a more accurate method than the one now generally used, of designating its left border by reference to the nipple and its right border by reference to the sternum. In women the nipple line is too indefinite to be considered, and in men the position of the nipples varies considerably; for instance, in twenty-one men in one of his wards at the Boston City Hospital, the distances between the nipples averaged 21.5 centimeters; the shortest distance was 18.5, the longest 25.5 centimeters. In other words, the variation between the extremes was seven centimeters from nipple to nipple, or 3.5 between the median and nipple lines. Thus we see that the position of the nipple may vary in its distance from the median line by more than an inch, or, to be exact, by one and three-eighths inches. Such a variation in the size of the heart as this might mean serious disease. The statement that the left border of the heart is a little inside of the nipple line would not strike us so forcibly if we were told that it was an inch further to the left than in health. Moreover, if we determine the right border of the heart as so many centimeters or inches to the right and the left border as so many centimeters or inches to the left of the median line, we determine not only how much it is to the right or to the left, but by adding the two quantities together we readily get the total width of the heart. The width cannot be obtained so accurately when the right border is determined with reference to the sternum, and the left border with reference to the nipple.

The Value of the X-Ray Examination in Pulmonary Tuberculosis.—

In a recent number of a prominent medical journal were some beautiful plates showing the marvelous power of the *x*-ray in picking out the smallest tubercle, the slightest degree of inflammatory infiltration, or other pulmonary condition. We confess to have looked at these with a great deal of interest, and to have marveled at the power of the *x*-ray in revealing conditions of the lungs. F. H. Williams in the *Boston Medical and Surgical Journal* of June 1, 1899,

has an article upon the value of the *x*-ray in the early diagnosis of pulmonary tuberculosis, in which he takes much more conservative views regarding the value of this means of investigation, but thinks that it is entitled to high rank in the early diagnosis of tuberculosis. He thinks that by it we may recognize early departures from the normal, but that the correct estimate of these conditions is difficult, unless the examination is controlled by a careful application of older clinical methods. He states that the diagnosis of pulmonary tuberculosis by this means, in the absence of other physical signs, is very difficult, but if there is a certainty of tubercular infiltration, then valuable data are obtained as to how extensively the lung is invaded. Repeated examination also shows the rapidity with which the infiltration is taking place.

He believes that where the *x*-ray examination shows a normal lung the absence of tubercular infiltration may be pretty definitely affirmed. In a number of these cases the absence of pulmonary tuberculosis was confirmed by the later history of the disease. One would judge from his paper that the *x*-ray examination was of the very highest negative value in pulmonary disorders. He does not advocate the giving up of any of our other methods of making a diagnosis, but he strongly urges that a careful *x*-ray examination be included in the study of these conditions, and that it rank as high as auscultation and percussion in determining the physical condition of the lungs.

Inoculations from a Case of Rabies.—

No more contradictory chapter in the practice of medicine than that dealing with rabies in the human can be written. A very considerable number of the profession are disposed to deny the existence of this disorder. It is admitted that the diagnosis of rabies is difficult, and there is no well recognized pathological anatomy of the affection. That it has been confounded with tetanus, hysteria, and other disorders of the nervous system does not make the affection any the less real. To any one who believes that rabies does affect the human, it seems almost like denying the efficacy of vaccination to say that the disorder does not exist. J. H. Anderson, in the *Philadelphia Medical Journal* of June 3, 1899, says: "It seems to me to be a very serious thing to educate the public that there is no such thing as hydrophobia, when there remains so much evidence of its fatality and frequency, and it is even a greater sin to educate medical students to the same erroneous view. I hope the day is not far distant when by faithful investigations hydrophobia will be recog-

nized as one of the most fatal infections." He refers to the successful inoculations of guinea-pigs from a rabid dog which had bitten two men, on November 10, 1898. The incubation in the first patient was twenty-nine days, and in the second thirty-one days. The duration of the disease in both was three days. Subdural inoculation of two guinea-pigs was followed by rabies, one in thirty days and the other in fourteen days after the inoculation. He has performed a series of eighteen inoculations from the brains of rabid horses, with similar results. In every case, when properly inoculated, rabies developed with the same period of incubation, symptoms, and death.

Colony Treatment for Epilepsy.—

W. P. Sprattling (*Medical Record*, June 24, 1899) reported to the Medical Society of the County of New York a detailed description of the Craig colony at Sonyea, and of its work. He said that while it was easy to keep the epileptics occupied during the summer, it had been a difficult problem during the long winter of that region. Some of them were now engaged in the winter in the work of making straw mats. It was the policy of the institution to change entirely the occupation and mode of life of those admitted. By a process of evolution extending over the past three years, it had been made possible so to train and educate some of the patients that they could act as efficient nurses, taking care of their fellow patients even during their seizures. In the more recently erected buildings a family of twenty persons was taken care of at the small cost of about $85 per year for each patient.

Dr. Frederick Peterson predicted that the time would come when the colony or village system would be applied to the chronic insane and to idiots and inebriates as well as for reformatory purposes. He said that this was the first and only colony in the State devoted to the care of the defective classes, and accordingly every effort was being made to have it a model.

Kernig's Sign in Meningitis.—

J. B. Herrick, in the *American Journal of the Medical Sciences* for July, 1899, has examined a number of cases in reference to the presence or absence of this sign, and has extended his study to an observation of its presence or absence in healthy individuals and those affected with other disorders than meningitis. He found the sign present in one case of subdural hemorrhage and in one case of gonorrheal rheumatism. The phenomenon is present in the majority

of cases of meningitis—say 80 to 90 per cent—and is only exceptionally present in other affections. More definite conclusions cannot be maintained regarding its value at present, and while it is sometimes present in other diseases, it should not be discarded as a diagnostic test.

The technique in eliciting the sign is exceedingly simple. The patient may be made to sit upon the edge of the bed with the legs hanging down, when extension of the leg can be attempted, or the thigh can be brought at right angles to the body as the patient lies on the side, or preferably on the back, and the leg then extended. The only requirement is that the thigh should be placed at a right angle with the body before the attempt is made to extend the leg. Not infrequently, in delirious patients, a little patient, gentle force must be used before the jerking and tense muscles yield. The same is true of some spastic conditions. Where Kernig's contracture is present, patience and gentleness do not cause the muscles to yield, and the back of the patient can generally be lifted from the bed without the knees giving way. The author says that no satisfactory explanation of this phenomenon can be offered.

Sanatoria and Special Hospital Treatment in Pulmonary Tuberculosis.—H. M. Kinghorn, in the *Montreal Medical Journal* for July, 1899, has an excellent contribution upon sanatoria for consumptives. The statistics are very unreliable, owing to the difficulty of classifying the cases that are received. Thus, in the National Hospital at Ventnor, scarcely one per cent of the patients were in the first stage, while at Goerbersdorf over 27 per cent were in the initial period. The Sanatorium de Turben, at Davos, statistics are very favorable, with a record of 40 per cent of cases cured and 40 per cent improved. The writer calls attention to the fact that consumptive hospitals for the poor have existed for a long time in England; that at Brompton was founded in 1841. He attributes some of the decrease in the death-rate of consumption noted in England to the establishment of these institutions. Roughly speaking, sanatorium treatment gives about one-third of all cases cured.

The principal aim of modern sanatorium treatment is to improve the patient's condition and increase his resistance to disease, by placing him under the most favorable environment. The invigorating influence of out-door life for many months can hardly be overrated. In regard to exercise, he agrees with Trudeau that it is much better to err on the side of overcaution in prescribing exercise. Too often lives are sacrificed to the deep and very general miscon-

ception which exists in the lay, and to some extent in the professional, mind of the value of active exercise in this disorder. If fever is present, the course of the disease is generally affected injuriously by exercise. Absolute rest in the open air is the best measure at our command to reduce the pyrexia of tuberculosis.

Elimination of the Typhoid Bacilli in the Urine.—

P. Horton-Smith, in *The Lancet* of May 20, 1899, has an exceedingly important paper on the respective parts taken by the urine and the feces in the dissemination of typhoid fever. The experimental work of this author shows quite conclusively that the older view of an exclusive elimination of typhoid bacilli by the intestines is no longer tenable. Typhoid bacilli are present in the stools in the third week of the disease; from this time they rapidly diminish and soon disappear. If a relapse occurs, there is a reappearance of the organism in the stools. The writer thinks that those cases in which the typhoid bacilli were found in the stools long after the disappearance of the fever were cases where the bowel discharges were mixed with urine. In about 25 per cent of all cases the typhoid bacilli are found in the urine. They rarely appear before the third week of the disease and sometimes persist long after convalescence is established. Unless the bacilli are in very large quantities, the urine is never rendered turbid by them, and the presence of pus or albumin bears no relation to the presence or absence of the bacilli. These facts justify the author in concluding that the urine is a much more dangerous excretion for the dissemination of typhoid fever than are the stools. The presence of virulent bacilli in the urine long after convalesence gives additional danger to this means of infection.

A Case of Combined Typhoid and Quartan Malarial Fever.—

C. F. Craig, in the *Philadelphia Medical Journal* of June 17, 1899, publishes a case of combined typhoid and quartan malarial fever. This is the first published instance of the association of these two conditions. According to I. P. Lyon (*American Journal of the Medical Sciences*, January, 1899), all cases of combined typhoid and malaria so far reported, in which both diseases are identified, number only twenty-nine, the most of these being cases of combined typhoid and tertian fever, and a few combined typhoid and estivo-autumnal fevers.

The case described by Craig was seen in the Sternberg U. S. A. General Hospital in Chickamauga Park. The patient gave a pre-

vious history of malarial fever. On admission he presented the clinical symptoms of typhoid fever—gurgling and tenderness in the right iliac fossa, dry hot skin, rose spots, and the typical typhoid tongue. The twelfth day of the disease a marked Widal test and marked diazo-reaction were present. The typhoid temperature continued until about the seventeenth day, when it fell and was succeeded by a chill, followed by a rise of temperature; seventy-two hours later this was succeeded by a similar chill and temperature. At this time the malarial organism was identified in the blood.

Bolognini's Sign of Measles.—

A. Koppen (*Centralblatt f. Innere Medicin*, xix, p. 673) has studied anew the relation of this sign to the development of measles. It was claimed by Bolognini that it was almost pathognomonic, and that he had found it in all but two out of two hundred cases of the disorder. It appeared early in the disease, before the rash, and gradually disappeared as the exanthema developed. The sign is obtained by placing a hand upon each side of the abdomen, which is relaxed as much as possible, and pressing toward each other with a slight to and fro movement. With this maneuver a slight friction is felt, as though two roughened surfaces were moved upon each other. Koppen found this sign present in 154 out of 343 examinations. He believes that Bolognini's explanation of the phenomenon is incorrect; he attributes it to fluids in the intestinal tube. In almost every case in which the sign was noted there was present more or less watery diarrhea. The same phenomenon was also noted in cases of diarrhea in which measles did not develop. Koppen thinks that it is a sign of measles, but that this disorder is usually accompanied by a diarrhea of this character in its early stages. The intestinal disturbance precedes the breaking out of the erruption and only accompanies it for a short time.

Estimation of Hemoglobin.—

B. N. Linnell, in the *Journal of the American Medical Association* of July 1, 1899, states that the error in using the color test in estimating hemoglobin is very great, no matter which instrument be employed. This is due to the fact that the perception of colors differs in different individuals, and in the same individual at different times. He has made comparisons of the different readings of 425 medical students with Fleischel's hemometer and finds that the variations in reading are about 20 per cent. His own variation he found to amount to about 10 per cent. In addition, the normal

standard represented by this instrument he finds too high for healthy American subjects. A simpler method of estimating the hemoglobin is found in Hammerschlag's benzol chloroform mixture, by which the specific gravity of the blood is determined. The specific gravity is an accurate index of the amount of hemoglobin. The variations under normal conditions are not great enough to interfere with the value of the test. Hammerschlag's method is mechanically accurate and eliminates the errors of color comparison. The errors made in taking the blood are common to both methods.

A Study of the Inclination of the Ribs in Diseased Conditions of the Lungs.—

Bouchard and Guilleminot reported to the Académie des Sciences (*La Presse Médicale*, June 24, 1899) their observations made with the radiograph and the radioscope upon the angle of the ribs in various diseased conditions of the lungs and pleura. They claim that in pleurisy, both with and without effusion, there is a variation of the inclination of the rib. The rib upon the affected side is less oblique than upon the sound side. In this way they claim to have elaborated a means of diagnosis in determining certain conditions. The method as described is a complicated one, and consists in determining accurately the long axis of the body in order to determine the relative obliquity of the ribs. Theoretically, it would seem that numerous objections could be advanced against the writers' claims. If the ribs were attached the same upon both sides, or, indeed, if the two halves of the chest were symmetrical, the rib obliquity might be of some value. The method is too complicated to be of practical value for clinical use.

Hypotonia, or Frankel's Symptom.—

H. C. Wood, in the *Philadelphia Medical Journal* of June 17, 1899, thinks that Frankel's symptom is of some value in the diagnosis of tabes. The test is made by having the patient lie upon the back, with the head upon a small pillow, when the legs are flexed upon the body. When at a right angle, or a little beyond this, the leg may be fully extended upon the knees, a position that cannot be assumed normally excepting by a trained athlete. Recently Wood has examined two cases of tabes in which the disorder was largely confined to the upper part of the cord, without optic atrophy and a preservation of the knee-jerks. In both of these cases the patients could not straighten the legs while in such position. He believes that this symptom is due to a loss of muscular tone, which is the

basis of the lost knee-jerks, and that the two symptoms are parallel, if not equivalent. Hypotonia, depending as it does upon the same conditions as impaired knee-jerks, is of no great value in the diagnosis of early tabes. It is not to be confounded with paralytic loss of power in the thigh.

Embolism of the Central Retinal Artery.—

F. B. Tiffany, in the *Medical Herald* for June, 1899, describes a patient 68 years of age, without previous ocular trouble, who suddenly observed that he had lost vision in the right eye. When looking toward a dark object he could see purple streaks gathering at the corner of the eye. After about a half hour these streaks turned to pale yellow at the center and seemed to tremble. The left eye had good vision and was free from pain. Ophthalmoscopic examination was made immediately, and showed the optic nerve slightly swollen. The arteries were small and the whole background of the eye was blanched. There were no signs of circulation in the central trunk nor its arteries, and the veins were atrophied and collapsed. Back from the disk they were engorged, but not tortuous. The patient was of a rheumatic diathesis, without kidney disease, and he had no valvular lesion of the heart, though the latter organ was atrophied. Treatment by pilocarpine and inhalations of amyl nitrite were without benefit.

The Cause of Syphilis.—

At the last Congress of Internal Medicine in Germany, Van Niessen claimed to have demonstrated conclusively the bacillus of syphilis. He claims to have inoculated monkeys and pigs with a disease which closely resembles human syphilis. The claims made by Van Niessen in this article are radical and would seem to need extended confirmation before they are generally accepted. A suspicious circumstance regarding these last observations of syphilis is that the bacillus is said to be closely related to the higher organized fungi, such as actinomycetous dermatium. Rabbits are also said to be susceptible to the infection.

Revaccination.—

Saint-Yves Menard (*Revue Mensuelle des Maladies de l'Enfance*, March, 1899) gives a table showing the importance of revaccination. There is a popular notion that the entire body is renewed every seven years in the young, but that this is not true of elderly people. According to Menard's table, revaccination in from six to ten years

gave 17.6 per cent of positive results; at ten years, 15 to 18 per cent; at twenty years, 50 per cent; from twenty to forty years, 60 per cent; and from forty to sixty, 74.2 per cent; from sixty to eighty years, 82.9 per cent; and from eighty to one hundred years, 88.5 per cent. These figures show that vaccination immunity gradually disappears with advancing years; that at the end of the first decade nearly one-fifth have lost their acquired immunity, and that this proportion rapidly increases with advancing years. These statistics clearly show that the view that revaccination is unnecessary in the aged is incorrect.

SURGERY.

Rules for Determining the Necessity of Operation in Appendicitis.—

G. D. Ladd, in the *Medical Standard* for July, 1899, has an excellent discussion on the guiding symptoms which determine the necessity of operation. He says that the cardinal symptoms of appendicitis are tenderness and pain, and alterations in the temperature and pulse. These vary in their severity in different cases; in one case there may be repeated vomiting, in another high temperature, in another rapid pulse, or in still another great tenderness and pain on pressure over the region of the cæcum. If any one of these symptoms is very prominent, it indicates more than a simple inflammation of the appendix.

Tenderness is of the greatest value as a diagnostic symptom; it is variable and may not attract attention by its prominence in all severe cases, or may not be proportionate in its severity to the extent of the destruction going on in the abdomen. Pain, when it is severe or persists, or recurs with considerable severity, is an indication that a more serious condition than a simple inflammation exists—that local, if not general, peritonitis is present. Pain may be deceptive in its location or degree, but if severe and continuous, or persistently recurring, it is, taken alone, an indication for operation.

Temperature may be deceptive in appendicitis; it remains comparatively low in grave cases; it may mislead by suddenly dropping at a time when gangrene is taking place or pus is emptying into the general peritoneal cavity. A low or moderate temperature should not be interpreted as proof of a mild or safe case. In undoubted appendicitis a low temperature should be regarded as an indication of severe infection and a need for early operation.

The pulse may remain moderately low and of good quality until late in the progress of a fatal case. A rapid, feeble pulse calls for immediate operation. Persistent recurring vomiting indicates a severe condition; it may, however, be absent in severe cases. Its presence in a persistent and prominent form indicates a grave condition of affairs calling for immediate operation.

Surgical Gynecology Among the Insane.—

A. T. Hobbs, in the *Canadian Practitioner and Review* for July, 1899, discusses the advisability of surgical work among the insane. At the asylum for the insane in London, Ontario, there have been examined 187 selected cases with reference to the existence of disease of the pelvic organs. In these 163 distinct lesions were found. In 155 surgical treatment was employed. Twenty-two hysterectomies were performed, among which were three deaths—one from exhaustion on the third day, a second from accidental hemorrhage, and a third from septic pneumonia. The ovarian operations included tubal disease, dermoid cysts, hematoma; the ovaries were removed in twenty-one cases. Two cases of tubercular peritonitis were opened and flushed with warm salt solutions. Forty-two Alexander operations and ventrosuspensions were performed. Injured and diseased uterine cervices received treatment in forty-eight cases. Thirty-one cases of chronic endometritis, metritis, and subinvolution were attended to. Lesions of the vagina and perineum, including fistulæ, were repaired in twenty-two cases.

Mental recovery followed the physical restoration to health in 38.5 per cent; there was early improvement in 26 per cent; and 2.5 per cent died. Of the 100 women reported recovered or improved mentally, forty-nine had been insane two years or over prior to the surgical treatment.

Surgical Shocks.—

R. H. M. Dawbarn, in the *Canada Lancet* for June, 1899, says that too little attention is paid to shock. In a recent surgical work of 2272 pages, but four pages are devoted to this subject—just about the same as is given to the description of bunions. The chief aim should be to prevent shock, rather than to treat it after it has developed. The prevention of shock lies in the careful preparation of the patient before the operation, the administration of strychnine, the shortening of operations and, if necessary, making them in sections, completing a portion at one time and a few days later finishing. The best remedy in the treatment of shock is intravenous

injections of saline solution. If shock is well developed the results are not brilliant, but he regards this as one of the most valuable prophylactic measures that can be employed, and he urges its adoption after all operations before the patient comes out from under the anesthetic. In most cases the median basilic vein should be chosen for the introduction of the cannula. Where a speedy effect is not desired, nearly equal results can be obtained with high rectal injections of hot saline fluid. Hypodermoclysis is the slowest of all methods, as the lymphatics do not readily admit the transfusion of fluid into the blood. The temperature at which the fluid should be introduced is 120° F., and roughly estimated is about as hot as the hand can bear. The writer attaches much importance to the high temperature at which the fluid is introduced, and states that text-books are in error when they recommend the use of a fluid at a temperature of 100° F. The high temperature is stimulating to the flagging heart and maintains the tonic contraction of the peripheral vessels. The quantity introduced should never be less than a liter, giving it very slowly — never less than ten minutes to a liter. The plan which has lately been adopted by some operators of introducing the fluid before the operation is begun he condemns, as it increases the hemorrhage. There is no objection, however, to a large colonic injection in advance of operation.

Contracted Bladder Treated by Gradual Distention.—

George Haven (*Boston Medical and Surgical Journal*, June 15, 1899) says that urinary incontinence in children does not persist, as a rule, after late childhood, but that where it does continue, in the great majority of cases the cause is an insufficiency of the urinary bladder. The few cases which persist after puberty have been the opprobria of physicians. In but few of these cases has the size of the bladder been taken into account. In the majority, where the health of the patient is good and the urine normal, a contracted bladder is responsible for this unpleasant condition. The normal capacity of the bladder is hard to determine, but it is variously given at from twelve to sixteen ounces.

The writer reports two cases in which a condition of contracted bladder existed, with extreme urinary incontinence. Treatment was begun by injecting eight ounces of boric acid solution, which was gradually increased until twenty ounces could be introduced. Each injection was carried to the point of full distention, so that it gave considerable pain. Both cases were cured after about three months' treatment.

Xeroform in Military Surgery.—

Emilio P. Noguera (*Revista de Medicina y Cirurgia Prácticas*, April 25, 1899) states that during the Cuban war he treated a large number of wounds with this substance. Bullet wounds were cleansed by irrigation of 1:1000 sublimate solution, and the xeroform was dusted over the points of entrance and exit. Sword wounds were irrigated, sutured, and the incision covered by a layer of xeroform. In each case there was union by first intention. In contused wounds with loss of substance, in which approximation of the margins was impossible, healing under the xeroform treatment was brought about without the slightest irregularity. The soft, moist, and spongy granulations sometimes noticed with iodoform were never noted where xeroform was used. This drug performed a valuable service where a large number of wounded had collected, by rendering the wounds aseptic, thus admitting of some delay in treatment. From his observations he concludes that this substance is a powerful antiseptic of great value in military surgery; it absorbs secretions, sterilizes them, and prevents secondary infections. As a dressing he regards the substance as irreplaceable, as it maintains wounds aseptic for forty-eight hours and longer, and permits postponement of treatment without danger to the patient.

Subcortical Cerebral Abscess Without External Lesion.—

Hirtz reports in *La Presse Médicale* of June 24, 1899, the case of a young man who on January 16 received several blows from a club upon the head. He was transported to the hospital, having completely lost consciousness. The following morning he was still torpid, but continued to improve for the next ten days, and was then discharged recovered. On the 17th of the next month he was taken with an attack of Jacksonian epilepsy on the right side, and on the 25th he was readmitted with complete paralysis of the right arm. On March 1 trephining was done over the upper part of the Rolandic fissure. Puncture followed by incision showed a subcortical abscess, which was evacuated and drained. At the beginning of June the patient had recovered complete motion in the paralyzed arm. The direct examination of the abscess showed a few rod-like bodies which were decolorized by Gram's method, and on which attempts at cultivation and inoculation were negative. (The case is one of special interest, as the number which have been so far reported in which there was no lesion of the skin or of the skull are inconsiderable.)

The Healing of Vaccination Sores.—

A. K. Bonn, in the *Maryland Medical Journal* of July 1, 1899, says that in view of the antivaccination movement it is well to examine our work, to see that we are doing all that can be done in the prevention of accidents and suppurations following vaccination. While the glycerinated virus is rarely followed by suppuration, it occasionally occurs. The suppurating vaccination sore does not heal readily under the ordinary antiseptic dressings, but a single application of a solution of nitrate of silver, eighty grains to the ounce, and over this a dressing of absorbent cotton with bismuth, will heal almost any case within a week. He questions whether all vaccination vesicles ought not to be at once opened and the application of the nitrate of silver made to the interior. If the whole protective influence of the vaccinia has already been received when the papule begins to swell into the vesicle, the prompt treatment of it is desirable, and no good reason can be given why it should not be carried out.

A Simple Means of Uniting the Intestine by Suture.—

J. Thienot (*Revue Illustrée de Polytechnique Médical et Chirurgicale*, May 30, 1899) describes a simple and apparently practical means of uniting the intestine by suture. It consists of a rolled visiting card inserted into the divided ends of the intestine, and as it has a certain resiliency, as soon as it is released by the fingers it fills the lumen of the intestine and permits of an accurate adjustment of the sutures. It belongs to the same class of aids as bone plates, sections of carrots and potatoes, rubber rings, inflatable rubber bags, etc. The mere enumeration of these various devices would occupy a very considerable space, but they all serve substantially the same purpose, merely allowing of a more ready adjustment of the sutures and a more perfect coaptation of the divided ends of the intestines. It is probable that the device of Criel is as good as any of its class, and it certainly has the merit of great simplicity.

The Bloodless Reduction of Congenital Dislocation of the Hip.—

Julius Wolff, in the *Wiener Klinische Rundschau* of June 25, 1899, gives the results in fifty-two cases of one-sided and thirty-six cases of double-sided congenital dislocation of the hip, treated by Lorenz' bloodless method. Reposition was made in seventy-two cases at the first effort, the average time being about two minutes. In twenty cases the operation was repeated three or four times, the efforts extending over a period of one and one-half hours in

some cases. In six joints it was absolutely impossible to obtain a reduction. Of ninety-eight repositions, thirty-eight were followed by redislocations, but in most of these, by again replacing the bone, it finally remained in the proper position.

Catgut.—

E. Boeckmann, in the *St. Paul Medical Journal* for July, 1899, says that catgut will ever remain the ideal suture material, because of its absorbability. He gives an extended account of the cleaning, impregnating with antiseptics, hardening, receptacles, and sterilizing of catgut. He says that catgut which has been carefully prepared by washing, silvering, drying, stretching, and exposure to sunlight, followed by hardening in alcohol with or without the addition of formalin and sterilizing by dry heat, is an ideal suturing and ligating material.

THERAPEUTICS.

Starch Digestion in the Stomach.—

A. E. Austin (*Boston Medical and Surgical Journal*, April 6, 1899) has made some experiments with reference to the digestion of starch in the stomach. The importance of such a study may be inferred from the statement that two-thirds of the food of the body consists of starch in its various forms. The ferment used in the writer's experiments was taka-diastase, which was employed because of its remarkably strong amylolytic power. The results of his experiments establish the following conclusions:

Taka-diastase digests starch with remarkable rapidity in a neutral or slightly acid medium, and its rapidity is directly proportional to the quantity of taka-diastase used. Taka-diastase in the above medium is capable of digesting three hundred times its own weight of starch in one hour.

The digestion of starch by taka-diastase is accelerated and enhanced by the presence of a small quantity of free hydrochloric acid, while beyond a certain amount the free hydrochloric acid retards and eventually arrests the diastatic digestion.

The digestion of starch by taka-diastase is not interfered with by organic acids. On the contrary, the presence of a small quantity of organic acid enhances the diastatic digestion of starch.

The presence of albumin combined with hydrochloric acid seems to lessen the hindering action of free hydrochloric acid on starch digestion.

Albuminous foods, both of animal and vegetable origin, combine with, or neutralize, free hydrochloric acid of gastric juice, making the acid perfectly inert. The combined hydrochloric acid has no hindering action on diastatic digestion by starch.

In dogs' stomachs, when albuminous foods are given with starchy food, no free hydrochloric acid is found at the end of one hour, and in the meantime starchy foods are perfectly digested.

In the human stomach, when an ordinary regular meal is taken, the albuminous matter of the food combines with the hydrochloric acid of the gastric juice as fast as it is formed, at least for a period of one hour, and such combined hydrochloric acid has no hindering action on starch digestion; and the diastatic digestion of starchy food is practically completed within that period.

The Treatment of Whooping-Cough.—

M. P. Creel, in the *Medical Review* of May 27, 1899, says that the late additions to therapy in the treatment of this disease have not given as much satisfaction in his hands as the older treatment by belladonna. Most authors regard whooping-cough as a self-limited affection whose course runs from four to eight weeks. His experience with the disease convinces him that a cure may often be reached by therapeutic measures in a much shorter time. The following prescription he has found very useful:

℞ Tincture of belladonna ..... 32 minims.
Syrup of ipecac ..... 40 minims.
Syrup of tolu ..... 2 ounces.

A teaspoonful to be given each two hours to a child one year old.

Creel combines with this treatment five grains of bromide of sodium. Schering's formalin lamp is allowed to burn in the room with these patients; by keeping the flame low, one formalin pastil is consumed in three or four hours. This causes little, if any, irritation, and the inhalation of the disinfectant exercises an active influence over the affection. Of one hundred cases treated in this way, recovery was reached in seventy-five with an average treatment of ten days.

Treatment of Cardiac Failure in Pneumonia.—

Henry L. Elsner, in the *Therapeutic Gazette* of June 15, 1899, calls attention to some important considerations in the treatment of cardiac failure in this disease. He especially deprecates the use of those remedies which dilate the peripheral arterioles and thus, as the expression has it, "bleed the patient into the veins." This

internal bleeding does not remove the toxic elements from the blood as does the direct abstraction of blood. He calls attention to the fact that in pneumonia there is a lowered arterial tension, which is true of other infections. With this lessening of the peripheral resistance there is associated an irregular action of the heart, due to the lowered arterial tension. An editorial in the *Gazette* calls attention to the article and coincides with its conclusions, making the further point that in pneumonia the toxins paralyze the small muscles of the peripheral arterioles and in this way produce a direct fall in vascular pressure. The remedies that are most relied on by Elsner are strychnine and digitalis, the latter to be given not in the large doses recommended by Petresco, but in smaller doses associated with diffusible stimulants, such as ether, ammonia, or compound spirits of lavender.

Sanatoria in the Treatment of Consumption.—

A. J. Richer, in the *Montreal Medical Journal* for June, 1899, says that we are indebted to Brehmer for the successful establishment of a systematic treatment based upon absolute rest, open-air life, and an abundant supply of nutritious food. He states that the lymphatic and glandular forms of the disease are more likely to be improved by a prolonged sea voyage. The incipient pulmonary forms in which softening has just commenced are those which peculiarly lend themselves to the sanatorium treatment as carried out in the Adirondacks. Advanced cases with one or more cavities he thinks are best kept at home, where, surrounded by an appropriate sanitary régime, they commonly do best. It is this class of patients that so thoroughly demoralize the sanatorium treatment of tuberculosis. He says that the experience of the past three years has abundantly demonstrated the value of sanatorium treatment, and that at present it is the only method giving a uniform result—cures in 25 per cent of the cases and marked improvement in 60 per cent of the remainder. He says that these results would be still more favorable if patients were seen as soon as the disease was recognized.

Cinnamate of Sodium in Tuberculosis.—

The remedies for tuberculosis show no diminution in number. Scarcely a week passes in which some drug is not offered to the medical world as a cure for tuberculosis; when tried they are invariably found wanting. A few are harmless, and some may be of benefit in controlling and ameliorating certain symptoms of the disorder, but in the sense of a cure they are certain failures. To the

latter class evidently belongs the proposal of Lowski (*Wratch*, 1, 1899; *Medical Record*, June 17, 1899) to use cinnamate of sodium in this disorder. He gives it hypodermically, in a strength of 2½-per-cent solution. Under the influence of the drug the night sweats disappear entirely, an effect which is to be attributed to the tonic effect of the drug upon the circulation and nervous apparatus. The patients gain in weight and tubercle bacilli diminish, though in only one case did they disappear for a time. The cough and expectoration are lessened. In cases of rapid extension of the infection the drug had little or no effect.

The Extemporaneous Filling of Capsules.—

The administration of nauseous or irritating drugs would have much more extended application if physicians recognized that most patients can be trusted to fill capsules at the time they are used. C. D. Aaron, in the *Journal of the American Medical Association* of June 24, 1899, calls attention to the destructive effect which hydrochloric acid has upon the teeth and the mucous membrane of the esophagus. This acid, when placed in a gelatin capsule, is found to quickly destroy the container. He has met this difficulty by slipping one gelatin capsule within another. The double container will, he finds, contain the acid for a considerable length of time—much longer than is needed to swallow the capsule. The capsules are filled by the ordinary dropper, and in this way fifteen minims of hydrochloric acid can be administered at a dose without the possibility of its being brought in contact with the teeth.

Treatment of Conjunctivitis.—

M. A. Poukaloff, in *La Presse Médicale* of June 24, 1899, says that nitrate of silver has been regarded as a specific in the treatment of ophthalmia neonatorum. He thinks that calomel will meet the same indications as the nitrate, and that it does not have the same inconveniences. The conjunctivæ should be carefully cleansed with a solution of boric acid and then dried with tampons of cotton, and the calomel carefully dusted over the mucous membrane in a thin layer. The method is applicable among the poor, as it requires to be repeated but once a day, and in the vast majority of cases is followed by a prompt amelioration of the symptoms, the duration of many of the cases not exceeding seven days; and even in those that were chronic and severe, recovery was noted in fifteen days. His observations are based upon fifty-seven cases of ophthalmia in which gonococci were noted in the discharge.

The Treatment of Carbuncles.—

M. P. Creel, in the *Cincinnati Lancet-Clinic* of April 29, 1899, says that the iodides and sulphides of calcium are of little value in the internal treatment of these conditions. Of late he has relied upon ecthol in doses of a teaspoonful each two hours. This is the only drug which has seemed to shorten the course of carbuncles. Locally he uses the flaxseed poultice until the point of inflammation is demonstrated, when a free incision is made and the cavity is thoroughly curetted, removing all infected tissue. It is then carefully cleansed with peroxide of hydrogen and the cavity packed with absorbent cotton saturated with ecthol. Freedom of incision and thorough curetting is essential, but ecthol, both internally and externally, is of great value in limiting the process and shortening the period of the disease. The average duration of his cases under this treatment has been about ten days.

Triphenin as an Analgesic and Antipyretic.—

A. G. Servoss (*Merck's Archives*, June, 1899) states that he has tried many drugs which have been recommended as analgesics and antipyretics, but has discarded the most of them because of some defect, or bad after-result. Triphenin he regards as a safe, reliable analgesic and antipyretic, reducing abnormal temperatures quickly, and without any undesirable after-effects. In using it he has observed no cyanosis or severe sweats; nothing but a prompt return to a normal temperature, with a feeling of repose which follows relief from pain and aches naturally accompanying an increase of bodily temperature. He thinks that the drug excels as an analgesic. In rheumatism he has found the drug particularly useful combined with equal parts of salol. So far he has not met with a case of rheumatism in which this combination affected the heart unfavorably.

Chrysarobin as a Specific for Warts.—

G. W. Fitts, in the *Boston Medical and Surgical Journal* of June 29, 1899, says that warts upon the feet are to be distinguished from corns by the fact that they appear upon the plantar surface and that they bleed from a vertical bundle of papillæ somewhat above the pared surface. Warts in this situation are often mistaken for corns, but the treatment by applications of salicylic acid and collodion, which is so efficient in the removal of corns, has no effect upon the wart. Chrysarobin is applied in 10-per-cent solution dissolved in ether, or the ordinary gutta-percha preparation may be used. The

application should be made once a day, and the wart should be pared each time that it is used. In some cases it is difficult to use the knife for this purpose, and in these a fine glass-paper may be employed. This treatment is equally good for warts upon the hands.

Painless Injections of Mercurial Salts.—

E. Bezin (*Semaine Médicale*, March, 1899; *Merck's Archives*, June, 1899) says that guaiacol will render the injections of mercurial salts painless. The following formula is employed:

Sterilized olive oil	20 drachms.
Biniodide of mercury	6 grains.
Synthetic guaiacol	36 grains.

The painfulness of intramuscular or subcutaneous injections of mercurial salts has heretofore militated against this valuable means of treating syphilis. The mercurial salts cannot be used with cocaine because of the precipitation of the latter substance, which renders it useless as an anesthetic. Even though the latter objection were overcome, the continuous employment of cocaine would have serious objections which cannot apply to guaiacol.

Stypticin in Uterine Hemorrhage.—

H. J. Boldt (*Medical News*, vol. lxxiv, p. 417) gives a *résumé* of his experience with the drug and also what has heretofore been published regarding its use. Stypticin is a hydrochlorate of cotarnine, is a fractionation product of narcotine, and seems to be identical with hydrastinine in its physiological and therapeutic action. In the cases reported by Boldt a wide variation was noted in its effects in controlling uterine hemorrhage, due to different causes; thus, those due to fibroma, cancer, or retained placenta were not materially benefited. Favorable results were obtained in oophoritis, endometritis, and especially good results were noted in the menopause. The drug may be given by the mouth, but preferably by subcutaneous injections in one and one-half grain doses.

Solutions of Suprarenal Gland for Local Application.—

M. D. Lederman, in the *Laryngoscope* for April, 1899, says that antiseptics added to solutions of this gland impair their usefulness. In making solutions he takes about ten grains of the desiccated gland and adds it to a drachm of about 25-per-cent aqueous solution of glycerin. The mixture is then filtered and placed in a wide-mouthed bottle; if kept in a cool place it retains its activity for

several days. A solution prepared of this strength with glycerin will permit of its being used with a spraying apparatus. Solutions of suprarenal extract add much to the efficiency of cocaine and prolong the anesthetic action of the latter; they also prevent systemic absorption of the cocaine and so interfere with the development of toxic symptoms.

Aneson, a New Substitute for Cocaine.—

Masbachen (*Wiener Klinische Wochenschrift*, No. 3, 1899) describes a new local anesthetic which is somewhat more powerful than cocaine. Chemically it is known as trichlorpseudobutyl alcohol, or more simply as acetone chloroform. Heretofore this substance has been very little used in medicine, owing to the fact that it is insoluble in water. This has now been overcome, and according to this writer it not only possesses decidedly greater anesthetic powers than cocaine, but is free from toxic action. The pains noted after cocaine infiltration had not been observed where this substance was used.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Experimental Study of Washington Schoolchildren.—

A. MacDonald (*St. Louis Medical and Surgical Journal*, July, 1899) has given us some conclusions based upon the study of Washington schoolchildren. The study includes a considerable proportion of colored children, and hence admits of some comparison between the races. Mr. MacDonald is a specialist of the Bureau of Education. He gives a copy of the blanks upon which the data were gathered, and which seem to be very full in the matter of detail. His conclusion regarding the circumference of the head is that mental ability increases with an increase in the circumference. Children of the non-laboring classes have a larger circumference of head than children of the laboring classes. The head circumference of boys is larger than that of girls, but in the colored children the girls slightly excel the boys. Colored girls have larger heads at all ages than white girls.

For a certain period of time before and after puberty girls are taller and heavier than boys, but at no other time. White children not only have a greater standing height than colored children, but their sitting height is still greater; yet colored children have a greater weight than white children — that is, white children in relation to their weight are longer bodied than colored children. Bright boys

are taller and heavier than dull boys, while the bright colored boys excel the dull in height, the dull excel the bright in sitting height. This seems to indicate a relation of dulness and long-bodiedness for colored boys. Pubertal superiority of girls in sitting height and weight is nearly a year longer in the laboring classes than in the non-laboring classes. Children of the non-laboring classes have in general greater height, sitting height, and weight than children of the laboring classes.

Girls are superior to boys in their studies. Children of the non-laboring classes show greater ability in their studies than children of the laboring classes. As age increases brightness decreases in most studies, excepting in drawing, manual labor, and penmanship. In colored children brightness increases with age; the reverse is true in white children. As to children with abnormalities, he finds that boys of the non-laboring classes show a much higher percentage of sickness than in the laboring classes; defects of speech are much greater in boys than in girls; boys show a much greater percentage of laziness than girls. Dull boys show the highest per cent of unruliness. Abnormalities are most frequent at dentition and puberty. Children with abnormalities are inferior in height, sitting height, weight, and circumference of head.

Treatment of Convulsions in Children.—

W. F. Boggess (*Pediatrics*, June 1, 1899) discusses the general subject of convulsions in children. The treatment of this condition is divided into two parts—the treatment of the convulsive paroxysm, and treatment belonging to the systemic condition, of which the paroxysm is only a symptom.

When called to see an attack of convulsions the practitioner should lose no time in questioning the attendants, but should treat the case symptomatically, in ignorance of its true cause. The child should be at once put in a hot bath (90° to 97°), with cold cloths to the head. A strong child may stay in the bath ten to twenty minutes; a delicate child from two to five minutes. This is a time-honored custom which few practitioners would have the temerity not to observe. The bowels should be at once unloaded by a large enema. If overloaded stomach is suspected, give vin ipecac, or alum and molasses, or other domestic emetic.

The child should then be placed on a cot or bed, and if convulsions continue, ether or chloroform may be given tentatively to relieve symptoms until other systemic medicaments can be employed. The chief of these are the bromides and chloral hydrate. If the

child can swallow, give from two to five grains of bromide of potassium or sodium, with one to two grains of chloral, every fifteen to thirty minutes for four to six hours. This dose is suitable for children one or two years old. If the child cannot swallow, double this amount can be given per rectum. The use of chloral by rectal injection is one of the most efficient means of checking the paroxysm.

The Clinical Significance of Peptonuria.—

W. F. Haehnlen, in the *American Gynecological and Obstetrical Journal* for June, 1899, reports seven cases of pelvic abscess, in all of which peptone was found in the urine. In only one case was there a discrepancy in regard to peptone in the urinalysis. As peptonuria is found in many other conditions, and its mere presence alone does not even show that suppuration is going on somewhere in the body, it is evident that to be of value it must be taken in connection with other symptoms in the case. The examination for peptone should not be confined to a single urinalysis, but at least two or three should be made on succeeding or alternate days. It may happen that peptone may be present in one examination and absent in another. In cases where peptone is present and disappears, to again reappear, it may be presumed that a pus sac has broken down and allowed absorption by the circulation, or else that suppuration is going on in some other portion of the body under favorable conditions for absorption. The author believes the presence of peptone in pelvic abscess to be significant of suppuration, when other known causes of peptonuria can be excluded. It is another diagnostic sign of a corroborative nature which may be added to those with which we are already familiar, or which are so often absent in obscure cases. The simplicity of the clinical recognition of peptone and the probable light which it may throw on a given case should commend the test wherever practicable.

The Immediate Repair of Perineal Lacerations.—

F. C. Hammond, in the *American Gynecological and Obstetrical Journal* for June, 1899, discusses the subject of perineal lacerations and their immediate repair. He says after the delivery of the placenta, when the uterus is well contracted, a thorough examination should be made, to ascertain the nature and extent of the lacerations, if present. Under no consideration should a casual external examination suffice, for oftentimes a deep internal tear may be present and the skin perineum remain intact. The vulva should

be separated and a careful inspection of the interior of the vagina be made. A good light is a necessity.

A simple tear through the mucous membrane may be treated with dusting powders. When the laceration extends through muscular structures, sutures should always be inserted. Chromicized catgut is preferable for the inside sutures, and silk or silkworm-gut for the outside. If an anesthetic is required, the preference should be given to ethyl bromide, then chloroform, or a mixture of equal parts chloroform and ether. Never allow a complete or incomplete laceration of the perineum to go unattended. While it is oftentimes best to repair the laceration soon after delivery, still, if necessary, on account of exhaustion of the patient, etc., twelve hours may elapse and good union be obtained.

Inversion of the Uterus.—

H. E. Marion, in the *Boston Medical and Surgical Journal* of May 4, 1899, reports two cases of this rare accident. Both were primipara. In one there was apparently no cause for the accident; in the other, in the third stage, it is stated that "the uterus did not contract quickly, and I stimulated it by manipulation. After fifteen minutes, when there had been apparent contraction of the uterus, I made slight but not continuous traction of the cord, at the same time keeping one hand on the uterus." After the removal of the placenta flowing was considerable, and it was noticed that there was nearly complete inversion. In both these cases reposition was established without much difficulty, and both patients made an uninterrupted recovery.

In discussing the etiology of the affection, the writer states that no satisfactory explanation has yet been given, but that undue tension of the cord and a paralytic condition of the uterine muscles are important factors. The most fruitful source of inversion is traction of the funis in order to remove the placenta. A vulnerable condition in the patient on the one hand, and a faulty technique of the obstetrician on the other, or a combination of these two, with perhaps associated factors, are chiefly responsible for the accident.

Acetanilid Poisoning from External Application.—

T. S. Wescott, in *Pediatrics* of June 15, 1899, describes the case of a baby who had intertrigo. The inflammation of the skin was especially marked in the folds of the groin and in the creases of the thigh. A dusting powder of acetanilid was ordered and used only once, when alarming symptoms developed. At ten o'clock of the

day on which the powder was used marked cyanosis developed, with grayness of the skin and coolness of the surface. At 3.30 P.M. the child could not be easily roused. Two hours later the effect of the drug had nearly worn off. The writer mentions the number of cases in which this drug has produced toxic effects; among others Newton's case, in which a very extensive burn was dressed by dusting from twenty to thirty grains of acetanilid. This was followed by extreme cyanosis, weak and irregular pulse, and dilated pupils. In the case of Wescott the actual amount of surface exposed was very small. The conclusions drawn are that the use of acetanilid as a desiccant dressing with young children, even where there is an insignificant exposure of the broken skin, is dangerous.

Gonorrhea of the External Genitalia in the Female.—

A. B. Tucker, in a paper read before the New York Obstetrical Society (*American Gynecological and Obstetrical Journal*, June, 1899), says that an extended experience with patients in whom gonorrhea is seen early has convinced him that in the vast majority of cases it begins in the glands of Bartholin or other structures adjacent to the vestibule. The urethral involvement is usually secondary, as is that of the vaginal mucous membrane. His treatment of these cases is by local applications only, and he has found it effectual. Thiol has given the best results. When Skene's ducts are involved, a filiform bougie of the smallest size is taken, covered with cotton, and dipped in thiol of full strength. This is passed into the mouth of the duct. The application is repeated every other day until no pus can be squeezed out of the gland. If other structures are involved, absorbent cotton is saturated with thiol and placed in contact with the parts, the whole being held in place by a bandage.

The Results of Uterine Extirpation for Cancer.—

E. E. Montgomery, in the *Annals of Gynecology and Pediatry* for June, 1899, discusses the question, "What can we promise from operative treatment of cancer of the uterus?" He says that cancer of the uterus is a local disease in its origin, which tends to pervade the structures, but extends to the corresponding lymphatic glands much more slowly than in other parts of the body. The chief dangers from relapse are from nests in the adjoining structures which have escaped notice, and reimplantation of fragments during operation. The data at our command form no accurate basis upon which to establish definite or positive prognosis. From our present knowledge we must depend upon the subsequent progress to deter-

mine the cure. If relapse occurs, it will most likely take place within the first six months. Should the patient escape two years, cure may be considered as having been established.

The New Diagnostic Spots of Measles on the Buccal and Labial Mucous Membranes.—

Henry Koplik, in the *Medical News* of June 3, 1899, says that every case of measles is accompanied by the development of peculiar spots upon the mucous membrane of the lips and cheeks. These consist of small, somewhat circular spots, which become bluish-white toward the center. Later the circular outlines disappear and the spots coalesce, leaving the mucous membrane of a somewhat darker color, studded over with these bluish-white spots. This appearance commonly shows itself from one to five days before the breaking out of the disease. With the appearance of the eruption this sign gradually disappears. It is claimed by the writer that the sign is of differential value in distinguishing other eruptive diseases, notably scarlet fever and German measles. The examination must always be made by daylight and with good illumination.

FORENSIC MEDICINE.

How Physicians Should Keep Books of Account.—

A. N. Taylor, in the *New York Medical Journal* of June 3, 1899, in discussing recovery of compensation on the part of the physician, speaks of how physicians should keep their account books.

A physician may be required to state specifically the nature of each service rendered and charged upon the account, especially if the amount charged for the same is of unusual character; it therefore is necessary that some explanation be entered with each item which will enable the physician to refresh his memory and testify to the particular services rendered.

Upon the other hand, if the books are to be used in evidence, in those States extending to professional communications between physician and patient the privilege of secrecy, they must not divulge matters coming within protection of the statute; otherwise they will be objectionable and will be excluded upon motion of the patient or his personal representatives. Generally speaking, any information obtained by the physician in his professional intercourse with his patients, which was necessary to enable him to treat them, and also the character of treatment advised or prescribed by him, are within

the protection of the statute. Here is clearly a case where the requirements of the law on the one hand, and the prohibition of the law upon the other, conflict in such a way as to subject the physician to a severe hardship. This hardship, it is thought, may be overcome if the physician living in a State which enjoins silence as to all knowledge professionally obtained will invent a code of arbitrary signs and characters, and by the use of these characters describe the ailments for which he treats his patients, together with the services rendered by him. Such characters when used must, however, be completely unintelligible to others, and it cannot be safely advised that he would be permitted to disclose his system to another and still claim the privilege of having his books containing such characters admitted in evidence. Should the physician have been so indiscreet as not to keep a book of accounts, and is unable to recall and testify specifically to the items of the account upon which he brings suit, or is prohibited from so doing by reason of the death or mental unsoundness of the patient, his ability to recover is a matter of very grave doubt.

Medical Legislation.—

T. C. M., in the *Cincinnati Lancet-Clinic* of June 17, 1899, writes to the editor discussing the unconstitutionality of medical laws. He says that many of the measures that have been passed for the control of medical practice are so offensive to popular rights and so extremely restrictive in their intention as to beget sooner or later the revolt of the masses against existing legislation. He pays his respects to recent medical legislation as follows: "Of late years medical legislation has all been framed with the intent and purpose of protection of the public from incompetent doctors. Few leading physicians in any State ever cared much for such legislation as that enacted. Medicine has grown into a most monstrous trust and monopoly. The right of the individual to employ his own medical attendant has been denied. The profession has undertaken to declare who shall practice the healing art and who shall be prosecuted for attempting to follow it as an avocation." The writer states that these views may be quite unprofessional, but he claims that the opposite doctrine is one which fosters irregular forms of medicine and tends directly to develop charlatanism and quackery rather than repressing it.

While we cannot agree with everything that the author says, yet the article is a powerful plea against special legislation in favor of the practice of medicine, and much can be said upon that line.

An Unsatisfactory Decision for the General Practitioner.—

The *Milwaukee Medical Journal* for June, 1899, gives an account of a case recently decided in Germany, which has excited not a little indignant comment in the German medical press. It is stated that it is a reflection on the ability of the general practitioner, and that it will tend to the employment of specialists, and they urge that practitioners in general protest against the decision of the court. A child, fifteen months old, required an extension bandage for a fractured hip, and the family physician called in an associate to apply it. The family physician inspected the bandage on the following and fourth days after its application. On the latter occasion he noticed evidences of undue compression and altered the bandage, but the local process developed into gangrene and required amputation, and the family practitioner was sued for damages. He was acquitted on the ground that a mere general practitioner could not be expected to understand the technique of bandaging.

Traumatic Rupture of the Heart.—

R. C. Newton, in the *Medical Record* of June 17, 1899, reports the case of a young man 28 years of age, five feet six inches in height, of vigorous constitution, who received a severe fall from a bicycle. At the time he was going at good speed, and some portion of the tubing, probably the handle-bar, came violently in contact with the chest. The skin was not torn, but there was a slight depression as though the costal cartilage had been fractured. At the post-mortem examination there was found some laceration of the intercostal muscle; the pericardium was intact, but was distended with dry, clotted blood. Examination of the blood showed a transverse rent at the apex of the right ventricle, extending through its wall.

Rupture of the heart, with contusion, without penetration of the chest wall, is a rare accident. A collection made by Cecil Robinson, in 1897, showed a total of twenty-two cases.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

ALBUMOSURIA.

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The clinical test for albumose in the urine is so easily applied that it should be made as a matter of routine, at least until our knowledge of this somewhat rare condition has become less vague. Without having attempted a complete study of the literature of the subject, the writer has found but few allusions to it within the last two or three years, and nowhere anything like a complete and satisfactory exposition of its significance. The following references are of interest and probably embrace an abstract of most that has been written on the subject.

Senator, in 1895, found albumosuria quite regularly in croupous pneumonia just before or after the crisis, and in purulent meningitis, peritonitis, and empyema. On account of the comparative ease of diagnosis of the other conditions, he considered it of most importance in meningitis. He speaks of the frequent association of albumin and albumose in the urine, and the fact that either may precede the other, or that they may alternate. Apropos of meningitis, the writer may say that he occasionally has to decide between this condition and intestinal toxemia in children, and that he recalls two cases which seemed genuinely meningitic, except for the absence of albumosuria.

The diagnostic value of albumosuria in pneumonia had previously been referred to by Wesener and Federici in 1894, the former claiming that albumosuria existed in most cases in which there was inflammation or pus formation.

Robitschek collected sixty cases among 121 miscellaneous patients. He stated that there was no such thing as physiologic peptonuria except in pregnancy, but that its occurrence was of little diagnostic value except in pyogenic cases, the peptone indicating the breaking down of tissues. With regard to the use of the terms *peptonuria* and *albumosuria*, it may be said here that Simon and all authorities who have investigated the matter with newer reagents state that true peptone does not occur in the urine, and that the writer's experiments confirm this statement. Whether the experimental peptonuria produced by the injection of true peptone into the blood is genuine peptonuria or only albumosuria, the writer cannot state. At any rate, the question is of no importance clinically. Hence, in further references, the word albumose will be substituted for peptone.

Sior found albumosuria in four cases of scarlatina, two of measles, two of diphtheria, three of pneumonia in the stage of resolution, one each of pleurisy and pericarditis, and several pus cases.

In 1898 R. H. Fitz reported a fatal case of myxedema—in spite of thyroid treatment—in which albumosuria occurred. He regarded the condition as rare.

Simon, in his work on diagnosis, states that pyogenic, hepatogenic, enterogenic, hematogenic, renal, and vesical forms of albumosuria have been described. Beside the various febrile and suppurative diseases already cited from other authorities, he mentions dermatitis, heart disease, leucocythemia, urticaria, apoplexy, and "various psychoses" as occasionally marked by albumosuria.

Frank Haehnlen, at the meeting of the Philadelphia Obstetric Society, April 6, 1899, read a paper and reported cases illustrating the value of this test in diagnosing pelvic suppuration. He quoted from von Jaksch to show that albumosuria was found in phthisis, pneumonia, meningitis, scurvy, syphilis, phosphorus poisoning—all conditions marked by disintegration of leucocytes, including pus cells. Haehnlen, like the present writer, has found that albumose is usually associated with albumin, and that the former especially is likely to be intermittent, so that several examinations may be necessary. John C. Da Costa remarked that he had found albumosuria in some cases of nephritis. J. M. Baldy considered the urinary test of value in differentiating between extra-uterine pregnancy and abscess.

If albumosuria indicates disintegration of leucocytes, we should expect it to accompany, or rather to follow, leucocytosis. This has

not been the writer's experience. A number of cases of scolecitis with pus formation have shown leucocytosis—in fact, leucocytosis is a fairly constant accompaniment of suppuration, unless the system is obviously unable to react. In passing, the writer may say that the neglect of blood examinations by gynecologists is to be deprecated, and that the practical value of the blood in diagnosis should be more generally recognized. Operators, especially, are too much inclined to open the abdomen first and make the diagnosis afterward. Several of the writer's cases of leucocytosis and eosinophilia, from various causes, have failed to show albumosuria. Of the six cases of albumosuria to be reported, blood examinations were made in Cases 2, 4, and 5. In Case 2 the absence of leucocytosis was of practical value in determining against operation in a return of the bowel trouble and fever, with tumor in the cæcum. In Case 4 the blood was also negative. In Case 5 there was considerable leucocytosis, but a differential count of leucocytes resulted normally; indeed, no eosinophiles were found in 200 cells.

The most convenient clinical test for albumose, whether in urine or stomach contents, is to float the suspected fluid over the alkaline copper solution used for testing for sugar. The writer employs a ten-per-cent solution of copper sulphate in glycerin, adding a drop or two to a little potassium hydrate solution, as needed. Any similar solution, including the Fehling, may be used. On warming carefully a lilac band develops in the presence of albumose or peptone. It has been objected that this test is not delicate enough, but the writer has found it again and again in stomach contents derived from the nearly empty stomach, or by vomiting, when there was not enough of albumose and peptone combined to give a measurable precipitate. Although it is said to be highly unscientific, two birds can be killed with one stone by using the same test-tube for sugar also, boiling after inspecting for the albumose band. From repeated control tests the writer can vouch for the clinical practicability of this method, though all text-books insist that proteids must be removed before testing for sugar.

Ivar Bang, in the *Deutsche Medicinische Wochenschrift* for January, 1898, calls attention to the fact that urobilin (normal or pathologic?) may give a reaction much like albumose, and he gives an elaborate method for separation. This reaction occurs so seldom (see statistics to follow) that Bang's apprehensions seem exaggerated. Urobilin may have been the cause of the two doubtful reactions for albumose which the writer found in urines otherwise practically normal and in patients not severely sick.

Much confusion has been wrought by using tests of too great delicacy, for albumin and probably albumose. Robitschek's finding sixty cases of albumosuria out of 121 patients examined can be explained in no other way. In the last 235 analyses made in the writer's private laboratory, on urines obtained from 147 cases, albumose was found positively in only five cases.

When the albumose ring is found—or in its absence, if there is special reason for wishing absolute proof of the presence or absence of albumose—it is the writer's custom to coagulate albumin by boiling, adding acetic acid if necessary, to remove it by filtration, and then to precipitate albumose by saturating with ammonium sulphate and cooling, using about ten per cent of the ammonium sulphate. After filtering out albumose, the writer has, in the cases here reported, demonstrated the absence of true peptone by treating with phosphomolybdic acid or tannin. In view of the unanimous verdict that true peptone does not appear in the urine clinically, this precaution is scarcely necessary. Aside from the six cases of albumosuria here reported, the writer, in ten years, has met with only two or three others, and the notes of these have been mislaid.

The absence of albumosuria is of as great practical importance to the clinician as its presence. Without attempting to go into statistics, the writer may say that he has failed to find it in most cases of albuminuria, of whatever origin, that he has never encountered it in diabetes, that he has failed to find it in some twenty or thirty cases of gastric cancer and in a few of intestinal cancer carefully studied, and in two cases of Addison's disease. As medical consultant he has examined the blood and urine of several cases of scolecitis, in addition to the physical examination, to determine for or against operation. In these cases he has not found albumosuria, whichever way the other conditions pointed. It is fair to state, however, that in most such cases his work has been only in regard to physical examination and review of a stained blood-mount, the urine analysis having been made by the attendant. In Case 2 of this series albumosuria occurred in an attack of fever, typhoid or due to colon bacillus, and in a subsequent attack plainly a typhlitis of some form of scolecitis existed, but there was neither albumosuria nor leucocytosis. The writer has also failed to find albumosuria in gastric ulcer. Not having a general practice, the writer cannot speak about other conditions.

Case 1.—This was a young man who had been out of town and had indulged excessively in sexual intercourse, and, to some degree, in errors of eating and drinking. Returning by rail, a ride of twelve

hours on a hot day, he had drunk ice-water in large quantities and had eaten the usual unhygienic restaurant meals. During the following night he developed an acute cystitis, with subacute gastro-enteritis. There was no evidence, either at the time or subsequently, of venereal infection. The urine was acid, yellow, containing a band of proteid on treatment with cold nitric acid—unfortunately, the writer was so careless as not to determine positively the presence of albumin by boiling, or, at least, to make no note of such a test—also albumose, but no excess of indican. Blood and mucus were present. A second sample voided the same day showed similar reactions. On the next day the urine was normal.

Case 2.—Mrs. D——, aged about 30, had previously shown normal urine on several examinations, none of them recent. Her main complaint was of acute cystitis, with some rise of temperature. The bowels were constipated, and the bladder condition was considered to be due to toxins absorbed from the bowel—not an uncommon condition, in the writer's experience. For two weeks the patient had what appeared, clinically, to be typhoid fever. The blood test was negative; the Ehrlich test was doubtful. On the first two days the urine was acid, containing both albumin and albumose, but only a small amount of indican. Under the use of ammonium benzoate the vesical symptoms soon disappeared, and the urine became free from proteids. Five days later the urine contained albumin but not albumose. Evidence of nephritis was not found.

Case 3.—This was a man 70 years of age, who had used alcoholics occasionally to excess, and who had led a rather hard life, though not one of destitution. His trouble was ulcers of the scalp with an abscess of the breast, following impoverished nutrition during a spree. The case certainly did not belong to the writer, and was taken simply as a personal accommodation for an old patient. The urine showed albumose and indican, but no albumin. Twelve days later, the septic condition having disappeared, the urine was normal.

Case 4.—A man aged 40, meat inspector, living comfortably, though admitting habits of rapid eating and indulgence in beer, gave a history of chronic stomach trouble pointing to ulcer. The stomach and liver were normal in area, by auscultatory percussion, the lungs and heart were normal, the kidneys were firm. Examination of the stomach contents was refused, and an exact diagnosis was not made. The urine showed a trace of albumin by boiling, a considerable precipitate of albumose by ammonium sulphate, and

a moderate amount of indican. Microscopically, calcium oxalate and a rather thick-walled cell suggesting the ovum of an animal parasite were found. On three subsequent examinations, during a period of two months, albumin and albumose were found together, but the indican had disappeared, on account of antiseptic medication. A diagnosis was never made.

Case 5.—A man nearly 65 suffered from cardiac dilatation with mitral regurgitation and chronic diffuse nephritis of several years' standing. Albumin and albumose were present in the urine, without globulin, which often accompanies albumin. Several examinations gave the same chemic results as well as the microscopic appearances of nephritis. On an analysis thirteen weeks after the first, albumose had disappeared. Six weeks later the patient had a uremic convulsion. The urine at this time was abundant in quantity, possibly on account of prompt saline injection and medication with citrate of potassium and salicylate of sodium, but it contained two per cent of moist albumin, by boiling, and on thorough centrifugalization a trace of albumose and indican. According to previous experiments of the writer, boiled albumin by bulk represents about four times the weight of dried albumin. Purdy's precipitates with chemic methods are much more bulky. Four days later, when the patient was again quite comfortable, the twenty-four hours' urine amounted to 1200 cubic centimeters, specific gravity 1010; albumin present; albumose absent; indican, a trace. Earlier in the observation of the case urea had amounted only to five grammes in twenty-four hours. An estimation was not made in the last examination, as the solids were obviously much diminished and as the determination of urea is of very little practical value in such cases.

Case 6.—A German widow, aged 84, in this country from early adult age, seen in consultation with Dr. Storck. The patient presented an irregular tumor of the liver, reaching as low as the umbilicus, and with an apparently separate tumor involving the pylorus. There was no, or at most trifling, general ascites, but the hepatic growth was palpated through a fluctuating encysted fluid, about an inch in depth. The sensation was as if one were palpating through a partly-filled water-bag, and I can explain the phenomenon only on the hypothesis that the margin of the liver was adherent to the abdominal wall so that a sac of peritoneum was formed in which there had been an effusion. The stomach, by auscultatory percussion, was a trifle enlarged. The mass connected with the liver gave the same resonance as the liver as a whole, so that it must have been, superficially at least, of the same consistence.

Otherwise there was no abnormality developed by physical examination. The stained specimen of blood showed slight anemia, but no abnormality of the leucocytes. The urine contained a band of albumose and a trace of proteid by nitric acid as well as heat. Bile pigment was present, sugar absent, indican present only in normal amount. On account of the decomposition of the urine, a more careful examination was postponed till a fresh specimen could be obtained, and this was prevented by various minor delays, ending with the death of the patient. Necropsy was not allowed. Possibly the ring obtained was the urobilin reaction already discussed. However, I am familiar with the examination of biliary urines and have not observed the test except in this case. The diagnosis of ecchinococcus was considered and set aside.

Of these six cases of albumosuria, the first is unquestionably of the cystic variety; the second is probably of the same etiology, since albumose disappeared as soon as the vesical condition, in spite of the febrile and intestinal causes which continued. The third case indicates a remote pyogenic process. In the fourth case a hepatogenic or enterogenic cause might be assumed, but the diagnosis was obscure. In the fifth case the albumose seems to have been essentially renal, and its absence immediately after the uremic convulsion is interesting, though the significance can only be explained hypothetically. It is also important to note that in these cases indican was found lower than would naturally be expected. This raises the question which the writer discussed a year or two ago in MEDICINE, as to whether absence of indican with considerable intestinal putrefaction might not be due to renal insufficiency. It is especially significant that albumose is fugacious in conditions in which albumin is comparatively permanent. In the cystic cases especially it would be of value to know whether there were a local digestion of albumin, and whether, if so, it were due to systemic ferments or to those of bacteria. The absence of true peptone is against the assumption of the exit of systemic proteolytic ferments with the urine, while the absence of obvious intravesical fermentation of the urine is against the latter hypothesis. Still, it must be admitted that no adequate bacteriologic methods were employed to guarantee the sterility of the urine—it merely showed no gross signs of germ activity.

The whole matter of albumosuria being so blind, the writer would welcome criticism and suggestions.

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MOVABLE KIDNEY.[1]

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Movable kidney, although one of the commonest pathological conditions encountered in the practice of medicine, is still by many wrongly interpreted. It is by some regarded as a mere anatomical curiosity having no practical significance; by others of great importance, sufficient even in uncomplicated cases to cause disturbances of the chief functions of the organism, thereby endangering the life of the individual.

The latter view was held by Keppler, who regarded every case as demanding surgical treatment, and advocated the removal of the offending organ as soon as it "caused any disturbance of the system." Following this advice many healthy kidneys were removed and a number of lives sacrificed. Lindner, in 1888, was able to collect thirty-six nephrectomies for movable kidney, with nine deaths, giving a mortality of 25 per cent. Happily surgeons to-day do not indorse the radical views held by Keppler, and no one would advise the removal of a movable kidney in the absence of other indications. Unfortunately the opposite opinion, that of regarding movable kidney as possessing no serious clinical features, though less dangerous, is held by too many to-day. We must admit that this condition in itself seldom terminates fatally. On the other hand, in nearly every case it produces symptoms which render the life of the individual one of constant suffering, and in not a few acts as the determining cause of other and more serious maladies.

In order to understand the pathogenesis of movable kidney and to appreciate properly the factors necessary for its retention after it has been replaced in its normal position, a brief description of the topographical anatomy of the kidney seems to me essential.

The kidneys lie behind the peritoneum on the upper part of the posterior abdominal wall, close to the transverse processes of the vertebra, and mostly enclosed within the bony cavity of the thorax. They extend on each side from the lower border of the eleventh dorsal to the lower border of the second lumbar vertebra. These upper and lower limits are not constant, but are those found in a large percentage of the cases examined. Variations in the upper and lower limits of the kidney are common, but anything greater than the height of a vertebra is to be regarded as pathological. Cunning-

[1] Read before the Illinois State Medical Society, Cairo, May, 1899.

ham describes the kidney as having a constant location, under normal conditions, in the epigastric zone above the level of the subcostal plane, seldom reaching below the level of the upper border of the third lumbar vertebra, the right at times projecting one-quarter of an inch lower than the left, with the lower pole about five centimeters above the iliac crest. Pansch found that transverse sections of cadavers through the body of the third lumbar vertebra and two finger-breadths' above the iliac crest only exceptionally exposed the lower poles of both kidneys. He placed the average upper limit on a level with the middle of the spinous process of the eleventh dorsal vertebra. Von Helm, in 104 cadavers (70 male, 34 female), found that the upper and lower limits of the kidney were subject to considerable variation, being as a rule lower in women than in men. He considers the upper limit as being in the male the eleventh and in the female the twelfth costovertebral articulation. The lower limits he found quite inconstant, at times being as low as the crest of the ilium. These, however, must be regarded as pathological.

Most anatomists describe the right kidney as being situated lower than the left. Von Helm found this to be the case in two-thirds of the subjects examined, and Pansch in one-third. Quain's Anatomy places the right one and one-half centimeters lower than the left. Others hold that both lower poles are on the same level, and any variation is to be regarded as abnormal. Among these are His, Sappey, Luschka, and Rudinger. Under normal conditions the difference in the lower limits in the two kidneys is very slight, if any.

From a practical standpoint the relation of the twelfth rib to the kidney is of importance. This rib presents great variations in the extent of its development and in its relations to neighboring structures. It may be entirely absent on one or both sides, or it may be so short and attenuated as to render it impalpable. Holl found anomalies in development to be present in every third or fourth case, the right being more frequently imperfectly developed than the left.

Recamier (cited by Wolkow) did not find it absent in any of the fifty cadavers he examined with this end in view. In twelve, however, it was so short as to be indistinguishable, excepting by its mobility, from a transverse process. In fourteen cases its length varied from four to one and one-half centimeters. Under normal conditions the twelfth rib is parallel with the eleventh, and crosses the posterior surface of the kidney at an angle of 45 degrees, dividing it into a superior or thoracic and an inferior or abdominal

segment. The relative parts of the kidney represented by these segments are as 3.5 : 5.

In cases where there is a failure of development of the twelfth rib its course is not parallel with the eleventh, and the angle formed by it and the kidney is not constant. Variations in the relative size of the thoracic and abdominal portions of the kidney, even to entire absence of the thoracic, which normally represents the greater portion, may be encountered.

The anterior surface of the kidney—in the fetus lobed, in the adult smooth—is directed forwards and outwards, and is covered by peritoneum throughout its entire length. On the right side two-thirds or three-fourths is covered by the liver and separated from it by the peritoneum; it is also beneath the hepatic flexure of the colon, being in close relation to the same when a colic mesentery is absent. In this case the peritoneum passes from right to left from the anterior surface of the kidney immediately over the colon and descending duodenum, binding these three organs closely together. According to Jonnesco, the pars descendens duodeni is normally in intimate relation with the anterior surface of the right kidney. The extent of surface of kidney in contact with the colon and duodenum is influenced, according to Braune, by the degree of distention of these intestines.

The left kidney is in relation anteriorly in its upper third with the spleen, and its lower two-thirds with the splenic flexure of the colon. Its inner border abuts the cardiac end of the stomach. Part of it lies beneath the pancreas, which is grooved for the renal vessels. The ascending duodenum is in relation to a variable extent with its lower third. In the U type of duodenum the surface in relation with the left kidney is greater than when the V type exists (Jonnesco). The posterior surface, inclined inwards, is flat and lies against the crura of the diaphragm, which separates it from the last rib, the last intercostal space, and the lower part of the pleural cavity. Intervening between it and the quadratus lumborum muscle against which it rests is the anterior layer of the lumbar fascia. The upper third and at times the upper half of each kidney lies therefore above the lower limit of the pleural cavity. The relation of the kidney to this cavity explains the displacement of these organs which so commonly is noted in pleural exudates.

The external surface, also directed posteriorly, is likewise separated above by the diaphragm from the last rib and the last intercostal space, and below from the quadratus lumborum by the aponeurosis of the transversalis muscle. The internal border,

concave, and directed forward, rests upon the psoas magnus. This muscle, which inclines from within outwards and downwards, forms the lower and inner boundary of a fossa, the upper and inner boundary of which is the crura of the diaphragm; the quadratus lumborum with the anterior layer of the lumbar fascia in front of it forms its outer wall. These fossæ, one on each side of the vertebral column (Paravertebralen Nischen), are considered by Wolkow and Delitzin to be the chief support (sustentaculum renis) of the kidneys.

Of the structures that have a more or less important influence upon maintaining the kidney in its normal position may be mentioned the peritoneum, together with the so-called peritoneal ligaments, the subperitoneal fascia, the adipose capsule, and the fascia or capsula propria. Indirectly the renal vessels and the neighboring organs, particularly the pancreas and the adrenals, aid in supporting these organs. Other factors, such as the general intra-abdominal pressure and the suction action of the diaphragm, undoubtedly to a certain extent assist but cannot be classed with the fixation apparatus proper of the kidneys.

The parietal peritoneum, extending from the posterior abdominal wall over the suprarenal body, the upper half or two-thirds of the right kidney, the hepatic flexure of the colon, the descending duodenum, and the vena cava, passes upwards to the inferior surface of the liver. The peritoneal folds extending between the liver and these organs form the so-called peritoneal ligaments, which are regarded by many of supreme importance in the fixation of the kidneys. The ligaments chiefly concerned in the support of the kidneys are, first, the lig. hepato-renale, consisting of a strong peritoneal fold connecting the outer margin of the right lobe of the liver with the upper end of the right kidney; secondly, more internally, a fold passing from the under surface of the right lobe to the superior curve of the duodenum, and from there continued to the anterior surface of the right kidney; thirdly, a band of peritoneum passing from the neck of the gall-bladder to the superior curve of the duodenum (lig. cystico-duodenale). From there it is continued with the lig. hepato-duodenale to the anterior surface of the kidney. These folds of peritoneum are not always distinct, but are frequently blended together. This led Jonnesco to designate them collectively the lig. hepato-reno-duodeno-colicum.

The lig. hepato-duodenale (the right free edge of the gastro-hepatic omentum), which contains the bile-ducts, is a part of this broad fold of peritoneum described by Jonnesco. Traction on this

ligament and consequent kinking of the choledochus is considered by Weisker as the rational explanation of the jaundice that is occasionally associated with movable right kidney.

On the left side the splenic flexure of the colon covers the superior pole of the kidney and is held firmly in place by the phrenocolic ligament, which is given off from the diaphragm between the tenth and eleventh ribs.

A strong connective-tissue lamella, formed by the fusion of three layers of peritoneum, binds the anterior surface of the left kidney firmly to the parietal peritoneum.

The value of these peritoneal ligaments as supports to the kidneys is questioned by many. The arguments advanced by those who do not consider them of any practical value in holding the kidneys in position are, first, that the right kidney, which gives attachment to these ligaments, is more frequently displaced than the left, which lacks their support; secondly, they are not directly attached to the kidney but separated from it by connective tissue containing more or less fat, and therefore cannot materially aid in the fixation of the kidneys. The experiments of Wolkow and Delitzin show that even when these ligaments are intact, on opening the abdomen with the cadaver in the vertical position the kidneys will glide down behind the peritoneum for a considerable distance.

We may therefore consider that these peritoneal ligaments, although they may help in supporting the kidneys, are not the chief factors in preventing them from leaving their normal locality.

The fatty capsule is regarded by some as being the chief support of the kidneys. Landau considers it as the immediate means of support, and concurs with Bartholin in his statement that it is deserving of the title of ligamentum renis. This capsule, first described by Haller under the name of capsula adiposa, is derived from the lamina fibrosa of the fascia propria peritonei, which on reaching the kidney divides into two layers, one passing behind (fascia retrorenalis of Gerota) the other with the peritoneum transversely over its anterior surface. At the upper end of the kidney these two layers coalesce and separate it from the suprarenal body; below they unite near the brim of the pelvis, where they gradually become indistinct and are lost in the pelvic subperitoneal connective tissue.

The kidney, which lies loosely in the capsula adiposa, is firmly surrounded by its tunica propria. The fatty capsule is joined to the tunica propria by bands of connective tissue. In the region of the lower pole of the kidney the connective tissue fibers are especially strong, binding the tunica propria to the fatty capsule and the two

layers of the fatty capsule together, forming a pocket in which the kidney rests. The anterior layer of this capsule is rather firmly connected with the peritoneum by connective tissue fibers; its posterior layer is loosely adherent to the fascia covering the muscles in the posterior abdominal wall. According to English, the posterior layer passing upwards to the diaphragm is especially concerned in supporting the kidneys, and was named by him the ligamentum suspensorium renis. The practical value of this portion of the capsule connected with the diaphragm is shown by the experiments of Wolkow. In the cadaver in the vertical position, with the abdomen opened, the capsule allowed a certain amount of sinking of the kidneys; further forcible traction on the capsule caused distinct downward descent of the diaphragm. Again, when the posterior attachments of the capsule were severed, the body being in the vertical position, the kidneys descended and became flexed on themselves and appeared almost spherical. Wolkow concludes that even though the capsule may not be sufficient to keep the kidneys in place, it undoubtedly is an important factor in preserving their normal shape when the body is erect.

The other direct means of fixation, viz., the adrenals and renal vessels, are of relatively slight importance. The adrenals are firmly attached to the posterior abdominal wall and do not follow the kidneys when they become movable. The union between the kidneys and adrenals is slight, and not at all sufficient to be of real value in anchoring the kidneys. The renal vessels passing horizontally from the kidneys toward the median line can offer in themselves but slight resistance to the downward and inward excursions of these organs.

From the foregoing consideration of the means of fixation of the kidneys it will be seen that any one alone of these factors would be inadequate to support them. Combined with the general intra-abdominal pressure and the aspiratory action of the diaphragm, together with the support furnished by a relatively intact abdominal wall and with properly formed paravertebral fossæ, they are sufficient to retain the kidneys in their normal position and prevent any but very slight movements of these organs.

Great difference of opinion exists as to the question whether or not normal kidneys are influenced by the movements of the diaphragm — that is to say, if they possess a normal respiratory movement. Landau holds that "during life the kidneys remain almost immovably fixed. Even deep inspiration does not depress them." Küttner is equally as positive in his statement, which he

based upon the examination of a large number of cases. He classed all having respiratory mobility as pathological. On the other hand, Curschmann maintained that in all cases, under normal conditions, demonstrable changes in the position of the kidneys result from respiratory movements of the diaphragm. He considers all kidneys as movable; the pathological degree of mobility he designates as ren hypermobilis. Israel believes that in every case where no adhesions exist the kidneys are influenced by respiratory movements of the diaphragm, but not to the same extent as the liver and spleen. Further, the left, because of its more intimate relation to the diaphragm, has a greater degree of mobility than the right.

The experiments made by Wolkow and Delitzin on the cadaver demonstrate conclusively that the kidneys are both influenced by the movements of the diaphragm, and also that at the height of inspiration the left is more depressed than the right. They also showed that in no case under normal conditions could the kidneys be forced sufficiently low to permit of palpation.

The etiology and pathogenesis of movable kidney is still largely a matter of speculation. This is due to the scarcity of post-mortem records, and for the reason that when post-mortem examinations have been made, even when pronounced symptoms were present during life, very little evidence was found to indicate the manner of development.

The frequency is also a subject of considerable difference of opinion. Rollet, on examination of the records of Oppolzer's clinic, found that one case of movable kidney was encountered in every 250 patients examined. Hertzka was able to find it in only 1.1 per cent of 6000 cases examined. Glenard, in 950 patients treated for gastrointestinal disorders, found it in 145, or 15 per cent. In 500 gynecological cases examined by Edebohls, 90 had movable kidney. From these figures it will be seen that we may safely say that one out of every five or six women have movable kidney of such a degree that it can be recognized by palpation. Again, taking the records of all of the most reliable observers, we find that 80 per cent are found in women and 20 per cent in men.

One of the most generally accepted theories concerning the origin of movable kidney is that of Glenard, who considers this condition only a part of enteroptosis or general displacement of the abdominal viscera. He maintains that all of the symptoms ascribed to movable kidney may be present before or in the absence of any recognizable dislocation of these organs ("*La pretendu maladie du rein mobile peut exister sans rein mobile*"). According to Glenard

these symptoms are occasioned by a general relaxation of all the supports of the abdominal organs, and not alone by mobility of the kidneys, which may or may not participate in this general descent. Unquestionably, as a consequence of a loss of tonicity of the abdominal walls associated with relaxation of the structures which support the abdominal organs, there may be a downward displacement of the abdominal viscera *en masse*, which in a negative way acts as an etiologic factor producing movable kidney. The displacement of the kidneys in such cases must not, however, be regarded as the result of traction made upon them by the sinking down of the abdominal organs, but as the result of the loss of support furnished to the kidneys by the neighboring organs when in their normal position, and from a disturbance of the general intra-abdominal pressure that follows. The theory of enteroptosis cannot explain unilateral dislocation of the kidney; it is applicable to a certain number of cases, where both kidneys are involved and where in addition there is a relaxation of the peritoneal ligaments, dilatation of the stomach, and weakening of the abdominal walls.

Prolapse of the female organs of generation is regarded by Landau as a frequent cause of movable kidney. The agents which act as predisposing or direct causes of this prolapse, such as frequent pregnancies, heavy lifting, and tumors of the abdomen, likewise exert an influence in the production of movable kidney, but cannot be regarded as the immediate cause. It is possible that in some cases of extreme prolapse of the uterus traction through the ureters may be made upon the kidneys, as Landau says, and produce to a slight extent displacement of these organs.

Menstruation has been considered among the influences contributing to movable kidney by Lancereux, Fourrier, and others. These writers assume that at each menstrual period there occurs, as a consequence of the connection existing between the ovarian and renal plexuses, a congestion of the kidney. The increased weight of the organs resulting from this congestion is sufficient to cause displacement of the kidneys. Clinical experience has demonstrated that the symptoms of movable kidney are aggravated by the menstrual period, showing that a certain relation exists between the kidneys and the female generative organs; but any causal relation between menstruation and floating kidney cannot be easily demonstrated. If such a relation existed floating kidney would be more common than it is.

Absorption of the perirenal fat is held by many to be the most frequent direct cause of movable kidney. This can only be of

importance as a causative factor when the fat has been present in great quantity and has been rapidly absorbed. It cannot explain the origin of this condition in children under the age of 12 years, in whom there is no perirenal fat found. Again, it would be difficult to explain why the fat from around the right kidney should be more often absorbed than that around the left. This of necessity would occur, as we find in from 80 to 90 per cent of the cases the right kidney alone is movable. Trauma has frequently been cited as a cause of movable kidney. Küster believes that it is the most important factor in the etiology of this disorder. Henoch reports a case of an officer who was thrown from his horse, striking on his feet, and dislocating both kidneys. Other cases are recorded which appear authentic. We must therefore admit that in rare cases of trauma resulting from blows or falls, or as a result of muscular action from lifting or straining, the kidneys may be forced from their normal place.

In this brief review of what are considered the chief causes of movable kidney we see that none can be regarded as the immediate cause, but all as only in a way contributory or predisposing agents.

In considering the fixation apparatus of the kidney we found the so-called supports, viz., peritoneal ligaments, abdominal wall, abdominal viscera, renal vessels, and the general intra-abdominal pressure, all assisted in holding the kidneys in place, but were not the chief means. After a careful consideration of what has been regarded as the supporting apparatus, we must agree with Wolkow and Delitzin that the most important single factor in the retention of the kidneys is the shape and depth of the paravertebral fossæ in which the kidneys normally rest. If we accept this as true, then we should look to a malformation, either congential or acquired, of the fossa as the most rational explanation of movable kidney. This view of the importance of the paravertebral fossa was first advanced by Haller (quoted by Landau), who compared them to a nest. To Wolkow and Delitzin, however, whose anatomical researches have just been published, belong the credit of amplifying this theory and of placing it on a scientific basis. After carefully studying the configuration of these fossæ, both in cadavers in which the kidneys were normally placed and also in those with dislocation of the organs, by making plaster models of them, they arrived at the following conclusions, which I wish to quote: "The paravertebral fossa has a great variety of form, presenting a certain regularity. (1) The upper part of the fossa corresponding to the arches of the diaphragm shows a material difference between the left and right

sides. On the right side the arch of the diaphragm is flatter and reaches the maximum elevation more gradually than on the left. (2) In male subjects the fossa is deeper and narrower toward the lower end. Its form is more nearly pear-shaped. The impressions of the muscles (quadratus lumborum and psoas) and ribs are more distinct (on the model). These conditions remained unchanged when the body was placed in a vertical position. (3) In the female subject in whom there was no palpable mobility of kidney in the horizontal position the fossa was found well contoured, distinctly narrowing toward the lower end. On the right side the boundaries were less distinct, as were the impressions of the muscles on the plaster casts. On casts made with the cadaver in the vertical position the difference between the right and left sides was more apparent. Here the fossa appeared broad toward the lower shallow end and having less clearly outlined borders. In the horizontal position the contours of the right fossa were still rounded. (4) In cases of unilateral mobility of the kidney the asymmetry of the fossa corresponding to the movable kidney appeared even in the horizontal, but especially in the vertical, to have a cylindrical form, shallower and open below. The impressions of the muscles and ribs on the casts could scarcely be distinguished. (5) In cases of bilateral movable kidney these abnormalities reach their maximum. Here, even in the horizontal position, these fossæ were cylindrical, open below, and shallow; the right deformed to such an extent that insufficiency in fixation of the kidney is evident even on superficial examination. In one case there was present a right-sided pleuritic exudate which completely changed the fossa. Our observations therefore show that it is a fact that there is a variety in the form of the posterior abdominal wall in different individuals, and the possibility of a change in the same individual."

The question whether the external configuration of the abdominal wall would not show some peculiarity in persons having movable kidney was then investigated. This was demonstrated to be a fact both by clinical study and by experimental investigation on the cadaver. This fact was first observed by Chartes, who saw in a case of right-sided dislocation of the kidney a well-marked concavity in the lumbar region, external to the erector spinæ.

Wolkow and Delitzin's studies show that particularly in lean subjects a marked variation in form of the lower part of the chest and abdomen is found. In the male the waist is pyriform in the lumbar region, having a marked inclination forward. The female is more or less cylindrical, and particularly noticeable in those with movable kidney.

From this it will appear that the principal factor in the causation of movable kidney, and also the explanation of its frequency in the female sex, is to be found in the variations from the normal configuration of the paravertebral fossa. The frequency of movable kidney in the right side is also explained by the shallowness of the right fossa as compared to the left. The commonly accepted theories regarding the cause of frequency of displacement of the right kidney, such as greater weight and lower position of right kidney, the influence of the weight of the liver, and the relation between the right kidney and the right ovarian plexus, can have, as we have seen, little influence in forcing the kidney from its normal position.

The symptoms attributable to movable kidney vary greatly in their clinical importance in different individuals. In a few no serious effect upon the health is noted, even though the kidneys possess great range of mobility. In other cases, even in displacements of the first degree, pain referred to these organs and general disturbance of the functions of the abdominal organs may be very great.

The chief symptoms are in many cases referable to the nervous system. These vary from slight degrees of nervousness to a marked neurasthenic state. Pain referable to the back, particularly to the lumbar portions of the spinal column and radiating along the branches of the lumbar and sacral plexus, is a very constant symptom.

Intercostal neuralgia has been present in several cases. In two of Landau's cases lumbar and intercostal neuralgia of the left side were present in right-sided movable kidney. Gueneau de Mussey made the same observation. Menstruation, as before stated, aggravates noticeably the symptoms of movable kidney. The pain may be very greatly increased for some days before and after menstruation, though usually it ameliorates as soon as menstrual flow is well under way. As a result of the pain referred to the lower abdomen during menstruation, in many the mistake has been made of treating the pelvic organs, considering the case as one of dysmenorrhea. In a case of movable kidney complicated by nephrolithiasis which came under the author's observation, an operation on the uterus had been performed for the relief of the dysmenorrhea and menorrhagia, which were the most prominent symptoms exhibited. Fixation of the kidney and removal of the stone have given complete relief from all pain during the menstrual period.

Many affected with movable kidney suffer from gastric disturb-

ance varying in intensity from slight distress referable to the epigastrium with nausea, to severe pain with more or less constant vomiting, which has in many cases led to the diagnosis of gastric ulcer or cancer. Bartels attributes the gastric symptoms so common in movable kidney to pressure made by the dislocated kidney upon the descending duodenum, thus causing intermittent obstruction with consequent dilatation of the stomach. It would be impossible for a movable kidney to make this pressure on the duodenum, inasmuch as the kidney is displaced downward and inward in a direction parallel with the descending duodenum, and not against it, and therefore could not exert much pressure on this organ. Again, the same gastric symptoms are found in cases of movable left kidney. Landau considers that traction on the lig. duodeno-renale with kinking of the duodenum is the principal cause of the stomach symptoms. It would appear as if this disturbance could easily be explained if we consider the intimate relation existing between the nerve supply of the kidneys and the gastrointestinal tract. The kidneys are supplied by the renal plexus, which is formed by branches derived from the solar plexus, semilunar ganglion, and the small splanchnic nerves. The communication existing between the solar plexus, which supplies all of the abdominal viscera, and the renal plexus seems to offer the most rational explanation of the symptoms referable to the digestive tract. Jaundice is an occasional symptom of movable kidney. In some cases it is merely the result of the gastrointestinal catarrh which is so frequently associated with this affection; in others it is probably due, as Weisker claims, to traction on the lig. hepato-duodenale and consequent dislocation of the common bile-duct. Litten thought that direct compression of the common duct took place, but this would seem impossible.

The symptoms referable to the abdominal vessels are those produced by twisting or kinking of the renal vessels and by thrombosis of the renal vein, vena cava, or iliac vein.

As a result of the first mentioned condition there may be in rare cases a bruit which can be heard on auscultation over the infracostal fossa. The first case recorded was one observed by Landau. Lately Fütterer reports a case in which such a bruit led him to suspect aneurism of the abdominal aorta. In a case of Girard's (cited by Landau) thrombosis of the vena cava was the direct result of compression of that vessel by a movable kidney that had become adherent to it. Thrombosis of the iliac vein with consequent edema of the leg has also been noted.

Attacks of dizziness frequently associated with cardiac palpita-

tion is another common symptom. These are undoubtedly the result of disturbances of the circulation indirectly through the nervous system—probably from traction on the branches of the abdominal sympathetic. Fütterer regards next to gastric disturbance dizziness as the most frequent symptom of movable kidney.

Excepting in cases of pyonephrosis associated with movable kidney, there usually is nothing abnormal found in the urine secreted by the dislocated organ. In a series of eight cases examined by the author in which the Harris segregator was employed to collect the urine separately from the kidneys, in two there were pathological changes found in the urine. In one (case cited) the presence of a few blood cells suggested the possibility of a stone, which was found on exploration of the kidney. In the second case, a left-sided movable kidney, the urine from this kidney showed pus cells, while the opposite was absolutely normal.

In certain cases of movable kidney, usually after violent exercise or heavy lifting, the patient is seized with vomiting and severe abdominal pain, so great at times as to cause collapse and closely simulate intestinal perforation or strangulated internal hernia. Dietl was first to direct attention to these cases, which by him were supposed to be due to the kidney becoming fastened in the retroperitoneal connective tissue. To this condition he gave the name of renal incarceration. Nearly all authors writing since the time of Dietl have coincided in this explanation of this phenomenon. Landau does not agree with Dietl, but concludes after a careful consideration of the subject that the symptoms of renal incarceration are mainly caused by circulatory disturbances, the result of kinking or twisting of the renal vessels, particularly the renal vein.

Edebohls, after studying a case of renal incarceration in which the symptoms immediately disappeared on manipulation of the kidney, believes the cause to be twisting of the renal vessels resulting from the lower pole of the kidney pressing against the anterior abdominal wall in such a way that its further progress downward is arrested, while the upper pole continues to descend, thus causing a rotation of the kidney on its long axis with a consequent twisting of its vessels. This agrees with Landau's views on the subject. The acute symptoms of incarceration usually last in cases treated expectantly from five to fifteen days. In these cases, in addition to the pain, vomiting, etc., one finds a tumor sometimes larger than a normal kidney, which is very tender on pressure and which when manipulated brings on a recurrence of the nausea and vomiting. In addition the urine is often scanty and at times contains blood during

the first few days. These symptoms, with history of a movable kidney, which frequently the patient has known to exist previous to the onset of the acute symptoms, will generally suffice for a correct diagnosis. In many cases, however, the symptoms may lead to a suspicion of cholecystitis or appendicitis.

In considering the surgical treatment of movable kidney, it may be remarked that the medical treatment, particularly the Weir Mitchell rest treatment, can be classed only as palliative measures. Temporary improvement often results, but relapses occur as soon as the erect position is resumed. The treatment by application of abdominal supports or pads is also palliative, and probably never effects a permanent cure. In fact, once a kidney becomes dislocated nothing short of surgical measures and the direct fixation of the organ will hold it in place.

The aim of this paper is to advocate fixation of the kidney in (1) all cases when, after a fair trial of the palliative measures, the symptoms still persist; (2) immediately in all cases where the occupation or habits of the individual preclude the possibility of benefit being derived from abdominal supports. In these cases no time should be lost in temporizing measures, but operative treatment should be resorted to in the beginning.

The operative measures for the fixation of the kidney are to-day practically limited to extraperitoneal nephrorrhaphy as first practiced by Hahn and published by him in 1881. Many modifications of the immediate means employed in attaching the kidney to the abdominal wall have been advocated from time to time, but the operation is to-day essentially the same as the one devised by Hahn. The usual curved lumbar incision is made from the twelfth rib downwards along the border of the erector spinæ muscle, and forwards and inwards over the crest of the ilium. The kidney enclosed in its fatty capsule is exposed, and the capsule drawn into the wound. The succeeding steps of the operation, which comprehend the methods of fixation of the kidneys, are not carried out by all operators alike. Of the most generally available means of uniting the kidneys to the abdominal wall may be mentioned: (1) Union of the adipose capsule opened or unopened to the edges of the incision; (2) free exposure of the kidney by incision of the fibrous capsule, and suture of this capsule to the abdominal wound; (3) denudation of the kidney by stripping back the fibrous capsule along its convex border and fixation of the kidney by means of sutures passed through its parenchyma. To these may be added the method of Senn, in which he exposes the kidney, denudes its convex border,

and then fixes it in place by strips of gauze passed around the kidney and brought out through the lumbar wound.

Another means of fixation of the kidney which may be mentioned is that advocated by Schachner and tested experimentally on the dog. This consists in making a pouch or pocket between the internal oblique and the transversalis muscles, in which the kidney is placed. His experiments with this method on the dog were not very successful. He, however, regards the operation as practicable in the dog, but questions its applicability in man. It has not been attempted so far as I know on the human subject, and would seem to be open to serious objections. The great danger of trauma to a kidney firmly fixed between the muscles of the abdominal wall would be sufficient to prevent its general adoption. Experimentally on the cadaver no difficulty is encountered in making a pocket in the anterior layer of the lumbar fascia in which the kidney can be placed; but this in the live subject would not appear rational. In case the kidney became firmly fixed the pain occasioned by pressure upon it by the contracting abdominal muscles would probably be greater than that due to the mobility of the organ. It must be remembered in this connection that the kidney is not under normal conditions immovably fixed behind the peritoneum, and that in our efforts to retain the kidney in place it is possible that the pain which occasionally persists after operative measures have been employed may be due to an absence of its normal movements.

In this connection may also be mentioned the method employed by Péan of suturing the parietal peritoneum to the transversalis fascia and thus forming a pocket or support for the kidney. This does not appear to have given satisfaction.

The method of fixation of the kidney to the abdominal wall which has up to the present time given the best results (as shown by the statistics of Sulzer and others) is that of opening the fatty capsule, pulling as much as possible out of the wound, and then cutting off the superfluous tissue. After this the fibrous capsule is split along the convex border of the kidney and the edges stripped back from the kidney for a short distance. Sutures, preferably of catgut, are then passed through the cut edges of the anterior layer of the lumbar fascia, the fatty capsule, and the fibrous capsule. The kidney is further supported by strips of gauze packed around and below its lower pole. The abdominal wound is then closed excepting at its lower angle, where the gauze strips are brought out. The gauze packing should be allowed to remain for five or six days at least. After the operation the patient should be kept in bed

in the horizontal position for six weeks, during which time the general health should be improved as much as possible.

We must admit that the operation of nephrorrhaphy or nephropexy with the present methods of fixation of the kidney is not all that could be desired, although the results are far from being bad. It would appear that from the suggestion offered by Wolkow and Delitzin regarding the surgical treatment of this disorder efforts should be directed toward the restoration of the contour of the paravertebral fossæ.

The intraperitoneal operation for the relief of movable kidney has been abandoned. Sulzer considers an intraperitoneal fixation justified in cases where there arises a question of diagnosis, or where the kidney is adherent to some other abdominal organ. In either case it would be better after exploring the abdomen and freeing the kidney to close the peritoneal cavity and reach the kidney through the extraperitoneal route.

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103 STATE STREET.

A CASE OF FIBRINOUS PERITONITIS IN A CHILD TWO AND A HALF YEARS OLD.

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E. W——, aged two and a half years, was brought to the Tremont Dispensary on February 28, 1899. The report which came with the child was that she had always been well. Subsequent examination of her family history revealed that her father and mother were healthy, as well as the rest of her family. On the father's side, however, two brothers and one sister died from consumption. The father himself is apparently well, excepting for some trifling abdominal trouble, which in all probability is a lead colic, as he follows the trade of a painter. There is one other child older than the patient, who is in good health.

About Christmas of 1898 both the children were down with hard colds. About February 1, 1899, the patient had an attack of what was termed an inflammation of the bowels, but by this it was probably meant that the child simply had a diarrhea. There was no vomiting nor any distention or tenderness of the abdomen. The patient was treated by the family physician, and after two or three weeks the diarrhea ceased and she again appeared to be quite well.

On February 27 the mother noticed that the child's abdomen had become swollen, but aside from being rather irritable there were no other symptoms present. She had a good appetite and regular movements of the bowels.

Physical examination revealed a well-developed and nourished child. The mucous membranes were pale, and the child was evidently anemic; the tongue was moist and clean. The gums were sore, and four teeth were just coming through. The abdomen was swollen, tense, tympanitic, and appeared somewhat tender; it was, however, somewhat difficult to be sure of this latter fact, as the child objected vigorously to all attempts at examination. By percussion, some dulness was detected in the left iliac fossa, and the presence of fluid was suspected. In the brief time allotted no further physical examination was made, and with the object of clearing up the question of constipation, obstruction, or fluid within the abdominal cavity, one-tenth of a grain of calomel was ordered to be taken every two hours for a day or two until free catharsis was obtained. No positive diagnosis was made, but it was thought to be a case of indigestion, such as so frequently accompanies the phenomena of dentition in children.

On March 2 the child was brought back to the dispensary with the statement that no change in her condition had taken place. She was having two dejections daily, and the stools presented nothing abnormal. The child was still rather fussy, and persisted in picking at her nose until she made it bleed. She did not seem to be feverish, and ate and slept well. No change could be detected in the condition of the abdomen. As the child did not seem at all sick, it was deemed best to await developments and meanwhile continue the exhibition of calomel at the dose of one-tenth of a grain twice daily.

On March 8 we again saw the child. The abdomen seemed much less tense than it had been, and the patient was less fretful. Our provisional diagnosis seemed to be confirmed; the calomel was stopped, and a drachm of maltzyme was ordered to be taken after each meal.

On March 11 the child was brought back again, and it was stated that there was an increase of her irritability. The movements from the bowels were very frequent; in fact, the mother claimed that the child had a desire every five minutes. A more satisfactory examination of the abdomen was at length obtained, and revealed a marked percussion dulness across the entire lower half of the abdomen; no fluid wave could, however, be detected. Believing that the evidence now pointed to a tubercular peritonitis, the case was referred to Dr. Cumston for surgical treatment if he deemed it wise.

Examination of the child made by Dr. Cumston in most respects corroborated the clinical findings already noted. The child was well nourished and rather tall for her years. The skin was fine and soft, the hair long and silky. No enlargement of the inguinal, axillary, or supraclavicular lymphatic glands could be detected. The inspection of the throat showed nothing abnormal either as to the condition of the mucous membranes or the tonsils. There was no discharge from the ears. Auscultation and percussion of the thorax was negative.

Examination of the abdomen showed that it was somewhat prominent on the sides, but towards the middle line it presented a slight depression, representing the so-called *ventre en bateau* of the French authors. On palpation the entire abdomen appeared to be quite soft, and the child did not give evidence of any pain. By percussion the upper half of the abdomen was found to be tympanitic, while below a line dividing the abdomen into halves and crossing exactly through the umbilicus a complete percussion dulness was demonstrated to exist.

Analysis of the urine revealed an excess in the phosphates, but no albumin was found, although carefully searched for. Temperature by rectum was 38.5° C.; pulse 94; respiration 21.

The diagnosis of fibrinous tubercular peritonitis was made, and an operation was advised and accepted by the parents. The child was admitted to the hospital, and on March 13 a laparotomy was undertaken. An incision about four centimeters long was made midway between the umbilicus and the symphysis pubis. The skin and subcutaneous cellular tissue were carefully divided, then the rectus muscle, and then the deep fascia was reached. The latter was carefully incised, and when slit open to the extent of about a centimeter a whitish, pasty mass appeared in the opening. Laying the knife aside the finger gently examined this substance, when suddenly a gush of gas occurred, and we knew that the bowel had been entered. The wound was immediately packed with subgallate of bismuth gauze, a laparotomy pad and swathe were applied, and the child was carried back to bed in excellent condition.

The afternoon following the operation the child was eating well and playing with her toys, and appeared in no way inconvenienced by the unfortunate occurrence of an artificial anus. For the next week the child continued in about the same condition as before the operation; she ate and slept well, and appeared in fairly good condition. The feces were passed both by the artificial opening and by the rectum. The wound in the abdomen was kept very clean by frequently swabbing it out with peroxide of hydrogen and changing the dressings as often as required.

At the end of a week we determined to attempt the closure of this fistula, as the child's condition seemed to warrant it. Ether was given, and an incision parallel to that of the first operation was made about three centimeters to the right of it. To make matters brief, we will simply say that the same unfortunate complication occurred during the second operation, with the result that when the child left the operating table she had two fecal fistulæ instead of one.

The child survived the second operation about five weeks, and slowly died from exhaustion, as the opening into the intestine must have been quite high up, because the feces were very liquid and partially undigested when discharged through the wound. A curious thing to be remarked was that after the first operation the temperature oscillated around the normal and the pulse never was higher than 85.

An autopsy was obtained and revealed the following condition:

There was a complete absence of any fluid within the abdominal cavity. The lower half of the parietal peritoneum—that is to say, extending from the umbilicus to the pubis and across into both iliac fossæ—was covered by a layer of fibrinous exudate at least half a centimeter in thickness. Coils of intestine were embedded in this thick exudate and could not be detached from it without rupturing the walls, and this condition clearly accounts for the two unsuccessful attempts made to open the peritoneal cavity. Strange to say, the small intestine was devoid of any trace of tubercular infection, but from the cæcum to the end of the transverse colon a number of ulcerations were found, and at the end of the vermiform appendix existed an ulceration the size of a split pea, which would have certainly perforated had the child lived a few more weeks. The upper half of the parietal peritoneum presented a few tubercles scattered here and there, and these were also seen in small numbers on the omentum. The liver and stomach appeared quite normal; both kidneys presented a few miliary tubercles in their cortex and a certain amount of amyloid change. The thoracic organs were normal. The bladder, ureters, and genital organs were exempt from the process. The head was not opened.

This case is interesting in several ways. In the first place the onset and development of the affection was far from characteristic; secondly, the extent of the lesions would lead one to suppose that the symptoms would have been far more marked; and thirdly, it demonstrates how much the abdominal cavity of a young child can stand if an operation upon it is carried on with care.

We feel that we were justified in operating for the following reasons, viz.: The absence of tubercular foci in other viscera; the absence of blood in the feces; the general condition of the child was good, but the abdominal symptoms were increasing. Some years ago we opened the abdomen of a child aged four and a half years under very similar conditions, but the bowel was easily separated from the parietal peritoneum. The incision was allowed to remain open for ten minutes, and was then closed after breaking down some tough adhesions. The child made an uninterrupted recovery, and to our knowledge was in perfect health two and a half years after the operation.

TREATMENT OF TAPEWORM BY USE OF MORPHINE INJECTED INTO THE PROTRUDING PART OF THE PARASITE.

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The attempt at removal of tapeworm by any of the tænicides is followed by a large number of failures which, by the method which I have used in two recent cases, might be converted into successes.

It is a very common occurrence for the parasite under such circumstances to drop down into the lower part of the intestine and reattach itself with the sacrifice of a considerable portion of its caudal extremity. I have sometimes been able, by copious injections of water or saline solutions, to bring away the head of the worm, but far more frequently have I succeeded only in breaking off the worm.

Recently it occurred to me, while attempting to remove one of these pests, fifteen feet of which was visible and ten feet invisible, that I might take advantage of the latter portion by properly medicating the protruding part. I therefore, after tying a string moderately tight around the worm about three inches below the patient, injected above the string, directly into the substance of the worm, one-half grain of morphine; the protruding part was then severed with scissors just below the ligature, and the three or four inches remaining was passed up through the sphincters and left there about ten minutes.

A large injection of water was then given, and the upper portion of the worm was passed entirely motionless and apparently dead.

Since reporting this case in the *Iowa Medical Journal* I have treated one other case the same way and with the same results.

Most varieties of tapeworm have a pair of longitudinal vessels passing from one extremity to the other, through all the segments, and toxic substances injected into the body of the worm are taken up by them and reach every portion of the parasite.

The mistake is often made of simply prescribing some remedy with directions for the patient to use. Only a small percentage of successes can thus be expected.

The only proper method of treating tapeworm is about as follows:

The patient does not fast or have any preparatory treatment whatever, except that he eats no breakfast on the morning of the

day of treatment. At about 9 A.M. he is given a dose of infusion of pomegranate, or what is far better, of tannate of pelletierine, with one or two drops of croton oil. The patient should be kept at rest, generally under the personal observation of the physician, for two or three hours, when movements of the bowels will most likely occur and the whole or a part of the worm be passed. If only a part protrudes, then the hypodermic should be used as above described.

A NEWER PATHOLOGY OF EPILEPSY.[1]

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Epilepsy, a disease known and easily recognized since the most ancient times by its clinical history, is yet but little understood. Its etiology, pathology, and treatment are far from being settled. An early theory of pathogenesis was the medullary, proposed by Marshall Hall and elaborated by Schroeder van der Kolk, who defined epilepsy as a disease characterized by a hereditary, congenital, or acquired exaggeration of the reflex activities of the medulla oblongata. This theory serves to account very well for all the manifestations of the epileptic attack, except the psychical. But this theory, since the marvelous discoveries in cerebral localization, has given place to the cortical theory first proposed by Hughlings Jackson (1863). This leaves some of the epileptic symptoms unexplained, and yet no one can doubt the participation of the lower centers in the explosive phenomena; and further, there can be no question that lesions of the medulla alone may produce convulsions. The ordinary idiopathic epileptic phenomena with the aura, the loss of consciousness, the emotional and intellectual and the motor and sensory manifestations, all point to the cortex as the seat of the beginning of the attack, and the explosion that here takes place soon gives rise to others in the lower centers. The morbid anatomy of these cases consists in degeneration of the cortical neurons, cell-body, and axons; an increase in the neuroglia, varicose and fusiform dilatation of the vessels.

The great question to be determined is what is the cause of these explosive manifestations. Dr. Haig, who demonstrated that the elimination of uric acid was greatly diminished just before the paroxysm, and that after the convulsion the amount of uric acid thrown off was very great, reached the conclusion that epileptic seizures were due to the retention of uric acid in the blood, and that measures which would diminish the production of uric acid and promote its elimination should be curative in their results. Unfortunately, clinical experience does not coincide with the theory; while it is based on facts, yet the relation of uric acid to the attacks is a by no means simple matter. A flood of light has recently been thrown upon the question by one of Russia's profound medical stu-

[1] Read at the forty-ninth annual meeting of the Illinois State Medical Society.

dents, Dr. N. Krainsky (*Alienist and Neurologist*, October, 1896). He has confirmed Dr. Haig's observations as to the relation of uric acid elimination to the seizures. He asserts with emphasis that the "occurrence of a seizure without a diminution of uric acid is impossible. Epileptic seizures will not occur when 0.6 to 0.8 gramme of uric acid is excreted daily. If the daily quantity of uric acid excreted falls below 0.45, or especially below 0.35 gramme, a seizure is usually to be expected with certainty on the third day. Epilepsy is therefore to be considered not as a purely nervous disease, but as an anomaly of metabolism which has its basis in a contamination of the organism by a process of metamorphosis." The seizure must be regarded as a means of self-protection of the organism against the abnormal reaction, which otherwise would lead to its destruction.

Dr. Krainsky, by a series of experiments, demonstrated that epilepsy is an intoxication and that the poison is in the blood. By injecting blood drawn from a patient in the status epilepticus into a rabbit, he produced violent epileptic seizures two to three minutes later. Blood drawn from the same patient after the seizure, injected into the rabbit, produced no effect. The quantity of blood necessary to produce the seizures in the rabbit was exceedingly small—one to three cubic centimeters—demonstrating the virulency of the poison. These results were verified by numerous experiments. He then proceeded to determine what the toxic agent was. While satisfied that it was not uric acid, he reached the conclusion that it was closely related to it, and by very ingenious argument and experiments demonstrated that it was carbamate of ammonium. Carbamic acid, $CONH_2OH$, being carbonic acid in which NH_2 takes the place of OH, is an intermediate stage of albumin metamorphosis. If the nature of epilepsy consists in the periodical formation of carbamate of ammonium in the organism, which produces the seizures, and is then decomposed into urea and H_2O during them, the great problem is to determine the cause and place of origin of this abnormal metamorphosis. He explains the benefits of the bromides of potassium and sodium, not only by their sedative effects upon the nervous system, but by the ease with which they decompose the carbamate of ammonium, forming ammonium bromide and the carbamate of potassium or sodium, salts which are harmless.

The difficulty in curing by the bromides arises from the fact that they have no direct effect upon the abnormal metabolism, but simply serve to neutralize the poison produced, and quiet the nervous cen-

ters. The carbamate of ammonium, the offending material, being a product of abnormal nitrogenous metamorphoses and being transformed into urea or uric acid, will serve to emphasize the dietetic treatment of epilepsy, and make manifest the necessity of the least amount of nitrogenous food consistent with the vital processes, and of the cutting off of sugar in order that the nitrogenous metabolism may be more perfect. The condition of the digestive canal should always be inquired into, and purgation and gastrointestinal antiseptics used from time to time. Systematic muscular training by equalizing the circulation and stimulating tissue metamorphosis in general must not be overlooked. In the use of bromides we should always avoid pushing the remedies to a possible mental deterioration, remembering that an occasional epileptic explosion which readjusts metabolism is much to be preferred to the mental and physical damage done by too large doses of sedatives.

SOME OF THE COMMONER REFLEX SYMPTOMS FROM DISEASE OF THE RECTUM.

BY I. L. WATKINS, M.D., MONTGOMERY, ALA.

The subject of reflex symptoms is so little understood that any contribution on the subject must be regarded as speculative. That such phenomena exist is admitted by every one; and why they are, in this age of marvelous discoveries and wealth of knowledge, so little understood is beyond conception.

The most pronounced and annoying reflex symptoms are those due to disease of either the rectum or generative organs. These tissues are richly supplied with cerebrospinal and sympathetic nerves. Many conditions dependent on diseases of these organs, heretofore regarded as reflex, are in fact not reflex at all, but due to anatomical relations. The migration of bacteria by continuity of tissue is well understood. The old idea that all infections were conveyed through the lymphatics is now known to be incorrect. In cancerous diseases malignant growths are found in cellular tissue where no glands exist. The bacillus coli communis, whose natural habitation is the bowel, is known frequently to infect the neighboring organs. The gonococcus not infrequently infects the mucous membrane of the bowel. These facts should not be overlooked when investigating the cause of disease in a given organ.

That one who devotes most of his time to gynecological subjects should attempt to write on diseases of the rectum at first seems inconsistent and an infringement on the field of the proctologist; in justification of this effort I shall attempt to make a report of some cases coming under my observation that belong to no small class of cases who consult gynecologists for relief of symptoms referred to the pelvic organs. On examination these organs are found perfectly healthy. The question might justly be asked, Why did we not turn these cases over to a rectal surgeon? The answer to this question will be found in the statement that no one can be successful as a gynecologist without at least some knowledge of the diseases of the neighboring organs. The character of these troubles makes it desirable for them to fall in as few hands as possible.

In directing attention to this subject it is not my purpose to discuss the more common pathological conditions of the rectum, but to call attention to a line of symptoms of the pelvic organs which to a less careful observer might prove very confusing. The question may be asked whether any trouble exists in the rectum. The

answer is usually in the negative. Notwithstanding the statement that there is nothing wrong with this organ, in cases of failure to find, on careful investigation of the other pelvic organs, a condition sufficient to account for the symptoms, the rectum should always be examined. We will very frequently be deterred from making this examination, and be unable to give a positive opinion, the patient insisting all the while that the trouble is in the uterus, ovaries, or bladder. We may be able to elicit a history of a predisposition to dysentery and the passage at intervals of glairy mucus, which has been attributed to obstinate constipation. This condition may have existed for a few months, or perhaps for several years. The sphincter is abnormally contracted and very sensitive, which will render the examination unsatisfactory, owing to the pain on passing the speculum. With the aid of a good light and the sphincter well dilated the condition to which I ask special attention will, in the majority of cases, be found. On either the front or back surface, or maybe both, will be found an area, varying in size from a 25-cent piece to a silver dollar, where no mucous membrane exists. It begins about the muco-cutaneous junction and extends up the wall of the bowel. The base of this region is pale, with irregular edges, and the depth not more than the thickness of the mucous membrane. It exists frequently without any relation to a pile tumor or fissure. As a rule, more or less general proctitis may be found. Owing to the similarity of the mucous membrane and the base of this ulcer, in a bad light it is an easy matter to overlook it. Just what is the character of this ulcer I am unable to state, as I have not found them described in any of the works on disease of the rectum at my disposal. They are neither tuberculous nor syphilitic in character, as they rapidly yield to local treatment. When we remember how richly supplied these tissues are with sympathetic nerves, we readily see that the exposure of a small area of these nerves operating through the spinal nervous system may produce annoying symptoms. A bacteriological investigation might shed some light on the subject. This condition is most frequently found in people of sedentary habits who do not earn their daily bread or attend to their bodily functions.

I will select three typical cases only to report. It will be unnecessary for me to report more, since there is such striking similarity in them all.

Case 1.—In September, 1895, Miss W——, aged 22 years, from a neighboring village, applied to me with the following history:

She began to menstruate at an early age, which was regular and not attended with pain. She had had the usual diseases of childhood, but no serious illness. Was rather stout, with fairly good color. While at school was never active, being unable to indulge in the usual games with other girls. Before graduating she began to miss her periods, and developed nervous symptoms, for which she was taken from school and put under treatment by the family physician. Failing to get relief by this measure, she was placed in a surgical institute, where she had electricity, massage, and baths for several months. On the above date she applied to me with a line of symptoms very much exaggerated and very confusing—pain in the back, left side, both legs, extending to the knees, with the sense of a heavy weight in the pelvic region while standing. She was classed as a typical neurotic subject. Examination revealed a uterus normal in size, with some cervicitis, and small, sensitive ovaries. After the usual preparation she was curetted and a small hemorrhoidal tumor removed. Some improvement followed, which might have been attributed to the rest in bed. She continued to suffer with insomnia and the passage of large quantities of mucus from the bowels. Owing to great sensitiveness I was unable to treat the rectum further except under ether, which was administered, and the sphincter dilated. At this time the ulceration described above was found well developed, and treatment was directed to its relief. The usual application of nitrate of silver with other antiseptics, and occasional cutting through the base of the ulcer, sufficed to improve all her symptoms. Though not entirely relieved, she was advised to return to her home for the purpose of taking a rest from treatment, which she did. Feeling that she was quite well she decided that she would spend the summer at Mount Eagle, from where she wrote me a letter stating that she was perfectly well. Soon after this she returned to her home and found herself growing rapidly worse. Being discouraged with her experience with me, she now applied to two distinguished members of the profession, one of whom advised a removal of her ovaries, which advice she declined to accept. She has never recovered, and now regards herself as an incurable invalid. In my opinion, had this woman's rectum been properly treated at an earlier date she might have been saved from all the suffering which she has endured.

Case 2.—Mrs. McC——, aged about 35 years, nullipara, entered my sanatorium in November, 1895, very anemic and a confirmed invalid. About five years before that time her ovaries had been removed by Dr. Batty for dysmenorrhea. She has never been well

since that time, although she did not menstruate. Complained of severe pain in her left side, weak back, and indigestion. Had very much the appearance of a cancerous subject. On examination I found the generative organs in the condition usually produced by the operation which she had undergone. The vagina was patulous and the perineum was slightly lacerated. The uterus was displaced backward, and there was a fair crop of hemorrhoidal tumors. The perineum was repaired, the tumors removed, and an extensive ulceration on both anterior and posterior walls of the rectum was found. After some weeks of persuasion and argument I succeeded in getting permission to treat the rectum. Immediately she began to improve, and was relieved from all of her symptoms. In my opinion, this is one of a large number of cases where the ovaries are removed and the patient left in as bad or worse condition than before the operation. We should be very positive that these organs are the cause of the suffering before we remove them.

Case 3.—Miss A——, aged 22 years, was referred to me in July, 1898. The family history was negative. Menstruation regular; had had no sickness except a slight attack of dysentery about a year previously. Since that time she had noticed some mucous discharge from the bowel. For several years she had been a great sufferer with pain in the lower part of the abdomen, and part of the time was unable to walk or stand. Recently she had vomited her meals immediately after taking them. This statement is doubtless untrue, since she was in very good flesh. This symptom was relieved by threats of severe treatment if she kept it up. As she had been sent to me to have her ovaries removed, I made a careful examination under ether, and was unable to find any disease of these organs. Although she stated she had no trouble with the rectum, I found two very large ulcers, to which I applied pure nitric acid, which relieved her in about three weeks. When discharged she was able to get about actively, though when she came she had to be carried from her carriage to her room.

I might relate many similar cases, but my object is only to put the regular practitioner on his guard before he advises a patient that the ovaries will have to be removed, and for that reason she must consult a specialist. It is never pleasant to have to disagree with the diagnosis of the family physician, but when he is so careless as to make the error alluded to in this paper, humanity compels us to do so.

BOOK REVIEWS.

THE NEWER REMEDIES. Including Their Synonyms, Sources, Methods of Preparation, Tests, Solubilities, Incompatibles, Medicinal Properties, and Doses as Far as Known, Together with Sections on Organotherapeutic Agents and Indifferent Compounds of Iron. By Virgil Coblentz, A.M., Phar.M., Ph.D., F.C.S., etc. Third Edition, Revised and Very Much Enlarged. Price, $1.00. Philadelphia: P. Blakiston's Son & Co. 1899.

The subtitle of this work would lead one to think that it was a working manual, containing about everything that was known of the newer remedies; such, however, is not the case. It is an exceedingly condensed list of all the later additions to the list of remedies, arranged in alphabetical order, and contains only sufficient information to identify the various compounds. The enormous number of these is shown by the fact that the book contains from 1500 to 2000 titles. Of course, many of these are duplicates, but allowing for these, the number gives some idea of the enormous additions to the list of remedies in recent years. The author says that if the era of synthetic compounds is assumed to begin in 1882 with the introduction of kairin, the additions up to 1896 number about 800. In the last three years the average has been about 400 compounds each year. He does not overstate the matter when he says the future development of the synthetic compounds seems to be beyond all conjecture.

Among the more important of the later additions the author names eucaine "A" and eucaine "B," holocaine, pyrocaine, orthoform, guaiacol—all of which belong to the group of local anesthetics. The number of local intestinal antiseptics and iodoform substitutes has assumed formidable proportions, new compounds and combinations being of almost daily occurrence. He especially speaks of the interest that the silver antiseptic treatment has met with in recent years and gives as the most important of the later additions to the silver salts, hydrogol, protargol, largin, actol, itrol, and argentol. An excellent *résumé* of animal remedial preparations is given, as well as a brief but practical account of the combinations of iron with albumin and peptone, which are so well adapted to the prolonged administration of this important drug.

In the preparation of this work the author has performed a valuable service for the physician and pharmacist. The enormous increase in the synthetic compounds, with their long hyphenated names and their still more confusing trade names, gives a working manual of this kind very great value. It forms also an index expurgatorius, containing as it does the trade compounds which masquerade under a trade-mark, and which contain only well known substances to be found in the market under their true names and at much less cost.

PYORRHŒA ALVEOLARIS. By John Fitzgerald, L.D.S. London: The Medical Publishing Company, Limited. 1899.

This little work, as the author says, "is an attempt to point out the bearings of this disease upon the medical practice and to indicate simple methods of treatment within the reach of the family physician."

Since so much has been written at random upon this subject, and so little

original investigation has been done, the author is to be congratulated on having produced a terse work so covering all the essential points of this troublesome disease that the busy practitioner can see at a glance the main points in diagnosis and treatment. The author gives Dr. J. M. Riggs, of Hartford, Conn., due credit for priority in calling attention to this disease (and rightly so, although the disease has existed and is as old as man), because he was the first to describe it and to suggest treatment. The disease had naturally received the title of "Riggs's disease." The term "pyorrhœa alveolaris," later substituted, is, as the author remarks, "in many ways an unfortunate name, as it only describes one feature of the later stages of the affection."

There are so many complications ere the pyorrheic stage, in relation to the general condition of the system as well as the alveolar process, that it would have been much better to have retained the title "Riggs's disease." The local and constitutional conditions are described at length. The author leans toward the uric acid theory, as suggested by Pierce, as the constitutional cause, but ignores the fact that trophic changes due to any constitutional condition, as well as senility, may set up metabolism in an adventitious structure. Talbot has shown ("Interstitial Gingivitis, or So-called Pyorrhœa Alveolaris") that of 950 cases examined a bare six per cent showed uric acid. This demonstrates conclusively that uric acid was not a cause, but only an expression, of locked-up secretions in the system.

The discussion of treatment in the main is good. The physician will recognize at once that the patient must be placed upon proper diet. The system must be flushed with plenty of pure water. The local treatment as suggested must necessarily be removal of irritating substances in and about the gum margins. The use of pushing instruments for removing deposits is of questionable value, because of the danger of injury to the soft tissues, and pus infection. This disease is more to be dreaded than decay of the teeth. Since it is on the increase any suggestion along the line of treatment will be welcome to the physician; and since the trend of general medicine is along the line of prophylaxis, it is strange that the author did not deal with treatment from this standpoint. As a whole the work is a valuable one, and every physician will do well to have it at hand.

MINERAL WATERS OF THE UNITED STATES AND THEIR THERAPEUTIC USES. By James K. Crook, A.M., M.D. New York and Philadelphia: Lea Bros. & Co. 1899.

This work of 588 pages is an account of the various mineral spring localities, their advantages as health resorts, means of access, etc. The author tells us that the European peoples have not failed to appreciate the immense advantage to be derived from the intelligent use of mineral waters, but Americans have overlooked the fact that within their own borders are found the close counterparts of the best foreign springs. A complete and discriminating work on the mineral waters of the United States has been needed; though several volumes have been written, they have become antiquated through natural causes—the abandonment of once popular resorts and the development of new and improved springs. In the present volume more than 200 localities are for the first time described in a book of this kind.

In the preface the author says: "In the elaborate and well-nigh exhaustive tabulation of the American mineral springs made for the United States Geo-

logical Survey, by Dr. Albert C. Peale, 2822 mineral spring localities are enumerated. In the course of the present investigation the author has learned that while some of these springs have fallen into disuse, more than half of them have never been developed, and a considerable number have never been examined or named. These classes have been eliminated, while a few have been excluded on the ground of worthlessness or unadaptability to medical purposes."

The first part of the work, made up of eighty-two pages, is taken up with the general consideration of the subject of mineral springs and the sources from which the mineral constituents are derived. In the chapter on classification, the German, French, American, and English classifications are given. The American is based on chemical and therapeutic properties and seems to be the most practical. A mineral water is defined to be one which is used in the treatment of disease, either by internal administration or external application, and which owes its virtue to either solid or gaseous constituents, or to its elevated temperature. There is a general discussion of the therapeutics of mineral waters and their use in baths and douches. There follows a description, by location, of the various waters and resorts of the United States. In this list all of the States and Territories are represented, and one can but be surprised at the enormous number of medicinal springs and resorts in this country. The work is well issued and has an excellent index, and forms a valuable addition to the literature of therapeutics.

THE MECHANICS OF SURGERY. Comprising Detailed Descriptions, Illustrations, and Lists of the Instruments, Appliances, and Furniture Necessary in Modern Surgery. By Charles Truax, Chicago. Price, $4.50. 1899.

This large work of 1024 pages is intended to supply a complete description of surgical instruments. It opens with a brief history of surgical instruments, and this is followed by a chapter on the general principles applying to the construction of surgical instruments. That there is need for such a general work is apparent from the fact that much confusion is creeping into the nomenclature of surgical instruments. Thus we are told that a periosteal elevator is often referred to or described as a levator, raspatory, elevator, dry dissector, or periosteotome; a plain spring dressing forceps may be called a dissecting forceps, a plain artery forceps, or a tissue forceps. Standard text-books sometimes refer to forceps for hemostatic purposes as "nippers." The author refers to the confusion which has crept into the terms "proximal" and "distal," these sometimes referring to the instrument when held in the hand of the operator, or as it is used on the patient. The catheter may have either end described as proximal or distal, thus imparting not a little confusion to the description of the use of the instrument.

To show the scope of the work, we may refer to a few of the chapters. A lengthy chapter deals with the mechanical aids in diagnosis; there is one upon transportation of the sick and injured; another upon hospital equipment, which includes everything from sterilizers to operating gowns. Special sections are devoted to hypodermic medication, anesthesia, cauterization, amputations, etc.

We have indicated in a brief and general way the scope of the work. A perusal of its pages would easily convince one that the surgical instrument maker who has a full appreciation of his work raises it above the dignity of a trade to that of a profession.

TEXT-BOOK OF OPHTHALMOLOGY. By Dr. Earnest Fuchs. Authorized Translation. Revised from the Seventh German Edition by A. Duane. Second American Edition. Price, $5.00. New York: D. Appleton & Co. 1899.

The first edition of Fuchs's work was translated and published in 1892. Since then five German editions have been published, each of which was marked by careful revision and the addition of important new matter. The treatise is a large work of 860 pages, and is a complete exposition of ophthalmic science up to date.

The work contains an excellent chapter on ophthalmic testing. The author emphasizes more than in most recent works the importance of testing the visual field with colored objects; the value of this, both as a symptom of disease and in prognosis, cannot be overestimated. The photometer of Foster is described, but no special stress is laid upon the value of this instrument, though we think that ultimately it is destined to furnish valuable data in the study of beginning disturbances of the nervous system, particularly tabes.

Nearly a hundred pages is devoted to the consideration of diseases of the conjunctivæ. This chapter includes the description of the anatomical arrangement of the conjunctival sac.

Diseases of the cornea and sclera are adequately considered. There is an excellent discussion of the relation of foreign bodies to intra-ocular inflammation. The author takes the ground that the disturbances produced by them are not always due to microorganisms, but may be attributed somewhat to their physical and chemical characters.

There is a chapter devoted to the anatomy and physiology of the uvea, which includes a description of the embryology of the eye and a schematic representation of the lymph channels. The iris and ciliary body are adequately studied. The remainder of the work is devoted to the study of the diseases of the special structures and of refraction and accommodation.

The closing portion of the work deals with eye operations and an appendix describing the instruments used in ophthalmic work. The volume is accompanied by an excellent index. It is well issued by the publishers and is one of the most readable of the recent German translations, the text being quite free from those dislocations of the verb so characteristic of the Teutonic idiom.

A TREATISE ON HUMAN PHYSIOLOGY. For the Use of Students and Practitioners of Medicine. By Henry C. Chapman, M.D. Second Edition. Philadelphia: Lea Bros. & Co. 1899.

This second edition of Chapman's Physiology is cast upon the same lines as the first edition. It is a complete systematic treatise and forms an excellent text-book. It is rather more ambitious than some of the later handbooks, but is not as large as the American Text-Book of Physiology. The work is in accord with the newer researches, and in its general arrangement follows the same plan that has been adopted by the text-books on physiology for the past twenty years. Like Dalton, he starts out with a general description of the cell structure of the body, and then passes to a consideration of the proximate principles.

EDITORIAL COMMENT.

PREVENTIVE SERUM THERAPY OF TETANUS.

The recent epidemic of tetanus which has swept over this country as the result of the 4th of July celebration, and which occurs every year, calls attention to the necessity of prophylaxis in the treatment of this terrible malady. Wounds which extend beneath the palmar fascia are by far the most frequently complicated by the development of tetanus. Two views are held by writers; one is, that the dirt upon the surface of the hand, containing the tetanus bacilli, is carried beneath the surface by the wadding or piece of metal; another, and a less probable view, is that these substances are infected at the time of their manufacture. The former view is the one generally accepted. The bacillus, once beneath the surface, finds a favorable location for its development, as it is anerobic. The necessity of freely incising such wounds and thoroughly cleansing them is apparent. If this is done promptly, there is comparatively little danger of the patient contracting tetanus; but it is difficult to determine when such a wound is aseptic. The obstacles to inspection of a part like the palm of the hand and the disinclination to make extensive incisions will always render these infected wounds a source of danger and anxiety.

In this class of cases, the preventive serum injections will find favorable application. The serum treatment of developed tetanus has not been a brilliant chapter, but there is even a more striking relation between the early treatment and recovery in the case of tetanus serum than there is in the diphtheria serum. The recovery in tetanus is directly related to the promptness with which the injection is given; in well-developed or advanced cases of the affection it seems to have but little influence. There is every reason to believe, from the experimental data which we now possess of this infection and from the clinical results in beginning cases of the disease, that a large measure of, if not absolute, protection is secured by injections of serum, if they are made before the development of the disorder. With the knowledge which we now possess of the life history of the tetanus bacillus, it is possible to form a fairly correct judgment as to the class of wounds which will be followed by this disease. In dealing with such a condition, in which absolute local disinfection cannot be secured, it would be justifiable practice to resort to an injection of antitetanus serum. There is no reason to

believe that these serums affect unfavorably the general condition of the patient, nor indeed do they, as some believe, induce the disease in a mild form. They render the patient immune to the development of this infection, acting in the same way as does the diphtheria antitoxin. Indeed, there is a striking analogy between the two diseases; tetanus seems to be a local infection where there is produced an exceedingly virulent poison which acts upon the nervous system and produces the convulsions and ultimate protoplasmic degeneration of the nervous system. Diphtheria belongs to the same class, having a local development and producing a toxin of great virulence. Early preventive use of antitetanus serum is certain to play an important rôle in the prevention of tetanus.

EMPLOYMENT OF THE INSANE.

Those engaged in the care of the insane have long been of the opinion that the most unfortunate feature of asylum life was the tedium of the long days without suitable employment. Of course, this was only true of a portion of the insane, many of them being so occupied with delusions, acutely insane, or impaired in bodily health, that practically no useful occupation was possible. A large proportion of the convalescents and those in chronic terminal states have sufficient mental capacity remaining to admit of their doing considerable work, but they are not rational to a degree to admit of their living outside the institution. It is this latter class that become so rapidly "hospitalized," a term that has been invented to designate that aimless and hopeless condition, without energy or initiative, that characterizes a considerable proportion of the chronic insane in our institutions. For a score of years leading psychiatrists have been convinced that some occupation should be furnished to every asylum inmate who can be induced to work. Not only are the products of the labor useful, but even if the first cost of the articles produced is greater than to purchase them in the open market, the results in improved discipline and number of recoveries would justify the extra expense. Unfortunately, most of our state institutions have been so tainted with the leprosy of politics, with its associated want of continuity in management, that very little systematic employment of the insane has been accomplished. Only those who can be induced to busy themselves with the domestic arrangements of the wards do anything. Wherever a fortunate combination has kept one party in power for a considerable time, systematic efforts toward improvement in these respects is noted; but the next

change in the administration overturns all that has been done, and the institution lapses into a political appendage. There being practically no continuity in institution management in most of the States, but little can be done in the way of building up institution industries.

Fortunately the State of New York has of late years had a somewhat more suitable administration of its public charities, and we think the industrial features of the various State hospitals have been greatly improved. The State Commission on Lunacy has long recognized that employment of the insane in occupations having a useful purpose is an important remedial feature of their treatment. During the past year in all of the hospitals the industries have been increased in variety and extent; nearly all of the clothing is now manufactured in the hospitals by patients. In most cases the saving to the hospitals by home manufacture has been considerable. An instance worthy of mention is the roasting of coffee at the Utica State Hospital for all the hospitals of the State. The green berry is bought of the importer and shipped in bulk to Utica, where, under skilled direction, the patients assist in roasting it, after which it is distributed to the several institutions. The saving effected by this method has amounted to $23,725, an amount equal to nearly one-third the total cost of the coffee purchased by all the institutions during the previous year. In addition to this saving, a superior and uniform article has been obtained. The same rule has been applied regarding spices and condiments. In this way a strictly pure article has been secured at a considerable diminution in cost.

Another large industry that promises excellent results is the manufacture of soap at the Rochester State Hospital; although its operation has not extended over a period that would admit of an instructive comparison, there is no doubt that an economic as well as useful employment will be secured through this industry.

Undoubtedly, the best employment for the insane is out-of-door work in the garden and field. To secure as much of this occupation as possible, a large tract of land should surround every State institution, and as much of the time of the inmates as possible should be devoted to farm labor. There is no reason why all of the vegetables and other farm products required by an institution should not be raised by the inmates. The first cost of the land is considerable, but the ultimate saving is very great, and farm labor furnishes an ideal occupation for the insane. Unfortunately, in our northern States, the climate is so severe in winter that very little out-of-door work is possible, and it is the long period from harvest to seed-time

that is passed so dismally in the wards of an institution. For this period some manufacturing industry is absolutely essential. So far as they can be usefully and economically directed in providing for the wants of the insane themselves, it ought to be so employed. Under our civil service, however, but little can be accomplished, but we hope that the lessons to be learned from the experiences of New York State will not be thrown away upon an otherwise intelligent community.

PATHOLESIA.

C. F. Buckley, in the *Pacific Medical Journal* for July, 1899, tells us that the terms hypochondria and hysteria ought to be eliminated from the nomenclature of nervous diseases. He says that hypochondria has been replaced by the term neurasthenia. In this we differ from the writer. The term hypochondria is still employed in medicine to distinguish one of the partial forms of insanity in which the delusions relate to the health of the patient. Neurasthenia is, as its name implies, a weakness of the nervous system, and its leading symptom is fatigue upon slight exertion. The amount of exertion necessary to cause fatigue, of course, differs with different individuals; some are tired after a mental or physical exertion that would not prove to be a reasonable exercise of another's faculties. Without any definite standard, therefore, the question of presence or absence of fatigue symptoms is to be based largely upon statements of the patient. If there is a marked change in this respect in an individual, usually we are justified in assuming that the fatigue symptom is present, without assuming an arbitrary standard to which all patients must conform.

Undoubtedly the writer's criticism as to the etiology of the word is true. The original conception of hypochondria was based on the erroneous pathology that practically attributed all depression of spirits to disturbances in the secretion of the liver. If, however, the rule of the writer in excluding hypochondria were extended, it would necessitate a recasting of the entire nosology of medicine. Thus melancholia has entirely lost its original significance of "black bile" and is now applied to a distinct psychosis, characterized by extreme mental depression. Patholesia, the writer tells us, is derived from the Greek words *pathos* and *thelesis*, the latter term implying morbid will. This, he thinks, is the essence of hysteria. The writer's contention certainly simplifies the conception of the disorder, but it will not, we fear, be accepted by thorough students

of the affection. Hirt, in his last work, does not attempt a definition of hysteria, but speaks of it as a certain predisposition on the part of the patient, in which we must assume that the whole nervous system, central as well as peripheral, is different from that of healthy individuals. Its chief characteristic is general lowered power of resistance and self-control.

For many years the mental element in hysteria has been recognized, but to state that the varied mental phenomena of this disorder are to be included under the term "morbid will" expresses but feebly the psychic phenomena. Moebius defined hysteria as "a state in which ideas control the body and produce morbid changes in its function." Janet said that hysteria belonged to a group of mental diseases of cerebral insufficiency; it is especially characterized by moral symptoms; the principal one is a weakening of the faculty of psychological synthesis. Most modern writers class hysteria as a psychoneurosis, and this term probably comes nearer expressing the character of hysteria than any one word which could be coined. It is unquestionably vague, but this corresponds with our complete want of knowledge of the anatomical substratum of the disease.

Patholesia, with its implication of a morbid will, has no advantage over psychoneurosis as a term, because we are at once confronted with the want of a definition of morbid will. It is another example of the world resting upon Atlas, whose feet are firmly planted upon a turtle; but upon what did the turtle rest? It is of no use to quarrel with definitions until our anatomical knowledge of disease has advanced beyond mere speculation. Until this time arrives hysteria as a term, although admittedly faulty, will answer every purpose of the practical physician.

INJURIES TO THE BRACHIAL PLEXUS AND ITS BRANCHES IN DISLOCATIONS OF THE SHOULDER.

In injuries of the shoulder a guarded prognosis should always be made, unless the surgeon is quite confident that nerve injury can be excluded. It is by no means infrequent for a surgeon to be called to the dislocation of a shoulder that may or may not be complicated by fracture. The diagnosis is easily and quickly made, the bone is replaced in its socket, and a retentive apparatus applied, and the patient is informed that the outcome will be favorable. When the bandages are finally removed it is found that the arm is quite helpless, or even if there remains good motion in the fingers and fair strength in the grasp, that the elbow cannot be carried from the

side and the motion at the shoulder-joint is very limited. On examination the shoulder is found to be very much flattened; sometimes a considerable groove is noted between the acromion process and the head of the humerus. The result from an operative standpoint is good; the head of the humerus is found in the glenoid cavity, but the usefulness and range of motion of the arm is very greatly impaired. From the patient's standpoint the results are anything but satisfactory, and far from what he was led to expect when the probable consequences of the injury were first explained to him.

These untoward results are due to injuries of one or more cords of the brachial plexus or to some of its branches. The injury may have been caused by the displaced bone, or by the violence of the original injury, or to a combination of both of these. If the injury is to the brachial plexus or some of its cords, there may be paralysis of a considerable portion, or even all, of the muscles of the arm. There may be contusion with a restoration of function in a comparatively short time, or such contusion may be followed by a more or less extensive traumatic neuritis. This early paralysis from contusion may be overlooked in the pain and swelling incident to the original injury. If the neuritis and a paralysis involved the whole or a single trunk of the plexus, it is usually not difficult of recognition. The safest prognostic guide in these cases is sensation; if it is absent and returns early, usually an ultimately favorable prognosis can be given, but this should be guarded by the statement that weeks or months may elapse before there is a restoration of motion in the paralyzed muscles. This is due to the fact that contusion is followed by neuritis, which results in a degeneration of the nerve. In simple traumatic cases we may generally look for a regeneration in the course of time, which will be aided by massage and electricity. In only a few of these cases is the paralysis permanent.

The most insidious and difficult of diagnosis is injury to the circumflex nerve, which is the one most frequently involved in simple dislocations. This nerve is a branch of the posterior cord of the brachial plexus. It passes through the quadrilateral space, bounded by the teres major, under head of triceps and subscapularis muscles, and by the surgical head of the humerus, where it divides into a smaller anterior and larger posterior division. It supplies the teres minor and deltoid muscles, and is the nerve of sensation for the skin covering that muscle. It sends an articular branch to the joint, which is the pathway of trophic influence. An injury to this nerve means a serious impairment to the use of the joint. The

traumatism which has dislocated the joint has resulted in a chronic synovitis, and more or less pathological disturbance in the joint. At this time, to have its trophic nerve supply cut off is an additional misfortune, and one which frequently leads to chronic inflammation. Adhesions form, and with the atrophy of the deltoid muscle which accompanies the adhesions there is marked impairment of the movements of the shoulder.

To determine injury to the circumflex, it is necessary to carefully examine the sensibility of the skin over the deltoid. If tactile sensation is impaired over this region, a guarded prognosis should be made, as months must elapse before the nerve regenerates. The adhesions and joint troubles which follow injuries to this nerve are persistent and aggravated to a degree unknown in simple contusion or dislocation of the joint without nerve injury. We would lay especial emphasis upon this matter, as not infrequently malpractice suits following shoulder injuries are brought because the patient is led to believe that the outcome of the injury would be much more favorable than proved to be the case.

THE AMERICAN SOLDIER AND VENEREAL DISEASE.

Wm. A. Hammond, in an article in the *New York Medical Journal*, takes occasion to refute some of the statements of Mr. Edward Atkinson which appeared in a pamphlet entitled "The Hell of War." Dr. Hammond takes exception to Mr. Atkinson's view that our recently acquired territory will result in the debasing of the general health of the country, by reason of the spread of venereal diseases brought about by the returning soldiers from the Philippines, Cuba, and Porto Rico. The chief criticism of Dr. Hammond is leveled at the fact that Mr. Atkinson confounds the three types of of venereal disease—soft chancre, gonorrhea, and syphilis. Hammond says that the third "is the only one that possesses the slightest claim to the quality of infecting the general system and thus producing constitutional syphilis. The other two are simply local diseases which are treated locally, and the poison of which is, under no circumstances, absorbed into the blood so as to produce constitutional disease capable of being transmitted to the offspring." We would not quote the above were it not that the views of Dr. Hammond will be extensively exploited in view of the extremely rabid utterances of Mr. Atkinson's pamphlet. In a general way the criticisms of Dr. Hammond are correct, and no one with an exac knowledge of the subject would fall into such blunders as does

Atkinson, who evidently includes all forms of venereal disease as belonging to those which infect the blood and are capable of being transmitted by direct heredity. We, however, think that very few, at least of those conversant with the literature of the last ten years, will regard gonorrhea as simply a local disease. While it is true that it is probable that this disorder is not directly transmitted to offspring, excepting perhaps in cases of ophthalmia neonatorum, it is, nevertheless, frequently a constitutional disorder and one which produces very grave disturbances in the general health. It is believed by many that a very large proportion of local disorders of tubes and ovaries and other intrapelvic conditions are due to this disease. So extensive are the ravages of the gonococcus that some writers are of the opinion that syphilis is not responsible for as much suffering and impairment of health as is the gonorrheal infection. With the general criticism of Dr. Hammond every one must of course agree, but we fear that his words will be taken as a too favorable view of the innocuousness of the gonorrheal poison, when he classes it among the simple local diseases.

THE PUBLIC HEALTH ON JULY FOURTH.

The *Chicago Tribune* called attention on July 5 to the enormous number of injuries and accidents resulting from our senseless observance of Independence Day. The report reads like an account of a great battle rather than the joyful celebration of the founding of the Republic. Thirty-five deaths and over fifteen hundred more or less serious casualties were reported. The figures of the *Tribune* have been questioned, and several of the deaths in its list have been traced to other causes than the careless use of firearms. That the *Tribune's* figures are under rather than over the total number is unquestionably true. The list is gathered from published accounts, and many cases must have escaped record. It is not an official record, but the notices published in the lay press.

Again, the list does not count those who die from the secondary consequences of their injuries, many of which were trivial at the time of their infliction. Tetanus kills many whose original wound scarcely called for medical treatment. Attention was called years ago to the frequency with which wounds of the hand inflicted by the toy pistol were followed by this complication. It was thought that the chemicals used in preparing the blank cartridges were responsible for the disease. A better knowledge of the life-history of the bacillus tetanoides enables us to offer a truer explanation, but unfortunately it has not saved many lives.

The small boy rises early on the morning of July 4; he goes to some convenient vacant lot, and there fills himself with enthusiasm and covers himself with dirt and the tetanus germ, to an extent unknown on other days. The small pistol is discharged; the wadding or a portion of the metallic covering is carried beneath the deep palmar fascia. The wound, if dressed at all, is but imperfectly cleansed, and the anaerobic bacillus finds its most perfect environment.

The danger of these wounds should ever be in the minds of medical men called upon to treat them. A deep incision and thorough disinfection is the only safe method.

That we do not exaggerate the remote effects of these injuries is proved by the statement from New York that from July 4 to 16 there were in that city and vicinity twenty-four deaths from tetanus. Almost all the cases were due to wounds of the hand inflicted by toy pistols. If these figures from New York are multiplied by five, which would be a low estimate for the entire country, it will be seen how inadequate the figures of the *Tribune* are in estimating the carnage of our last national holiday.

THE UTILITY OF PUBLIC BATHS.

In a recent editorial in the *Medical Record* there is a general discussion of the utility of public baths. The extent to which they are found in various countries is given. Austria, Norway, and Sweden are in the lead, followed by Great Britain and Germany, with France a bad third. This country is far down in the list, being abreast of Italy and Spain in the want of public bathing facilities.

From this it should not be argued that the Americans are essentially filthy in their habits—at least not more so than the average native of Europe. One reason that the need of the public bath has not been very extensively recognized is due to the fact that bathing facilities are a recognized part of every well-to-do private household. This is not true in the case of Europe, especially the Continent. There, a bath-tub in a private house is practically unknown, and it is only a few of the more modern hotels that are provided with bathing facilities. This of necessity has led to the development of public baths, and it is the custom on the Continent for people who are well-to-do to go to the public baths; indeed, there are no facilities for bathing elsewhere. Instead of the absence of public baths being an indication of general uncleanliness on the part of the Americans, we firmly believe that if accurate statistics could be

obtained nowhere would per capita proportion of bath-tubs be so great as in this country. Our large cities show an enormous consumption of water as compared with European cities. Much of this, of course, is wasted, but a large proportion of it is devoted to keeping people clean. No one who has extensively traveled upon the Continent of Europe, and who is familiar with the personal habits of European peoples and those of America, but will agree that the Americans are as clean as any nation upon earth, with the possible exception of the Japanese.

All that we have said in defense of the cleanliness of the American people is not to be taken as an indication that public baths are not needed. Indeed, there is no requirement of the public health which is more neglected. Public baths are needed in the crowded, poorer quarters of our large cities; they should be built on not too large a scale and at as small a cost as possible. They are needed for that class in the population who are unable to afford the luxury of a bath-tub.

IMPROVING EXPERT TESTIMONY.

Expert medical testimony furnished a text for from two to three hundred articles which appeared last year in the periodical medical press of the United States. A cursory analysis of this vast literature shows that there is general dissatisfaction with expert testimony as now introduced in our courts, and a widely varying opinion as to how this is to be remedied. Many of these articles content themselves with a mere statement of the evils of the present system and do not pretend to suggest a remedy. Where they do, it is generally by a reference to the continental European system and an approval of the various modified forms of the said system. These writers seem not to have studied carefully the development of State experts in France and the fact that their system has not given the most perfect satisfaction. At the last meeting of the French association of those interested in forensic medicine, a proposed modification of the French law permitting the defense in criminal cases to summon their own experts was carried by a large majority. The continental system has received a further shock in the recent Dreyfus incident. M. Bertillon, than which there is no better known French name in American medical circles, testified as a handwriting expert before the Court of Cassation that Dreyfus was the author of the bordereau. Public sentiment in France believed that Bertillon blundered, or else he lied in testifying as he did, and there has been

a vigorous attempt at his removal from the anthropometric department. As a consequence he has been suspended from official duties, but has not been deprived of his office. The recent confession of Count Esterhazy, that he was the author of the bordereau, confirms the blunder or venality of Bertillon's testimony. This miscarriage of the French official expert system would lead us to think that it were wiser not to advocate the appointment of official experts in a country whose civil service is so debased by subserviency to practical politics as is ours.

GOLF AS AN EXERCISE FOR CHRONIC CONDITIONS.

Every physician recognizes the difficulty of providing suitable out-of-door exercise in the treatment of chronic conditions. The prescription of a certain distance that a patient is to walk is difficult for him to follow, because the mere walking without a purpose is, for the majority of people, irksome. The more active exercises, such as horseback riding, tennis, baseball, or cricket, are beyond the physical capacity of many patients, even when so violent an exercise is not absolutely contraindicated by their physical condition. Golf, as a physical exercise, presents many distinct advantages which make it especially adapted to those having chronic diseases in which moderate exercise carried to the point of tiredness is indicated. Its chief advantages are that it is an out-of-door sport and that it can be carried on all of the year, with the exception of the coldest months in the winter, or when the ground is very muddy in the early spring. It can be played nearly as well upon a wet as upon a dry day. The exercise is for both the upper and lower extremities and need never be so violent as to overtax the heart. The sport itself is sufficiently interesting to engage the attention and to afford some entertainment. Taken all in all, this latest fad may prove a great boon to many chronic invalids, as it is a temptation to out-of-door exercise of a moderate sort, free from harmful consequences.

REMOVING THE SICK TO THE COUNTRY.

The question of removing the great hospitals of Paris is being agitated. The discussion is not started in the interests of the sick, but is for the purpose of vacating the enormous holdings of land which these institutions occupy and which are needed for other purposes. While the purpose for which the change is urged is not the most praiseworthy, yet it may have within it some valuable

features. The proposed removal of the Paris hospitals is to take them beyond the city limits, leaving only emergency stations in the city. This plan has certain apparent advantages for the sick.

A change of scene and air is one of the most important things in the treating of sick people; particularly is this true of chronic cases and convalescents. There is nothing more depressing to the sick than a large accumulation of more or less hopeless cases which have been long enough in residence to become "hospitalized." This tendency may be largely overcome by breaking up the large hospitals into smaller units. Nearly one-half of the average population of a large city hospital would benefit by removal to the country. All of the convalescents should go there as soon as they can bear removal. There are some difficulties in the carrying out of the details. One of the most important of these is transportation; where this can be done by water, it is preferable. In the case of Paris, an ambulance boat could make regular trips on the Seine, and almost all the sick and wounded could be taken out of the city without the slightest discomfort. The movement in Paris will, if efficiently carried out, result in great good to the sick; it will be beneficial, if it does no more than overcome the idea that it is necessary to have a thousand sick people crowded together in the center of a large city.

CHRISTIAN SCIENCE AND SPIRITUALISM.

Under the heading "Two Debated Theories," the *Sunday Chronicle* of July 16, 1899, discusses spiritualism and Christian Science. This discussion points out the ill logic of certain sects of the Christian Church opposing these two doctrines. The editorial in question says that it is singular that professing Christians should be the most violent opponents of these two theories, the one claiming that the life after death is made real, and in the other the healing of the sick but repeats the miracles of the early church.

The editorial closes with the statement: "It is inconceivable that hundreds of thousands of otherwise level-headed men and women should have become monomaniacs simultaneously, and unless we credit such a theory, we must admit that there is at least a *prima facie* case for spiritualism and Christian Science." It is exactly this theory which we should credit, and which is amply supported by a study of the development of modern civilization. There are epidemics of belief in which contagion is carried from one to another, and hundreds of thousands of thinking, reasoning, and

apparently intelligent people do develop the same monomania. A study of the epidemics of witchcraft in the middle ages shows that this sort of mental contagion may involve a whole country, and even spread from one country to another. Perhaps one of the most instructive of all the smaller epidemics of this character is that of witchcraft, which has been so carefully studied, and which flourished in Salem, Massachusetts, at the close of the seventeenth century.

THE PUNISHMENT OF CRIMINALS.

The recent disclosures regarding the treatment of Dreyfus on Devil's Island again brings up the question of the treatment of criminals. The case should receive extended study from criminologists the world over, and the next meeting of the Prison Reform Association should certainly consider the case. The civilized world reads with a shudder the cruelties practiced by barbarians upon prisoners, and it shrinks from the methods with which semicivilized people carry on warfare. Our recent war with Spain had for one of its alleged causes the inhuman methods which the Spaniards were exhibiting in their efforts to suppress the insurrection in Cuba. In all civilized lands the care and reformation of criminals is receiving increased attention, and earnest efforts are being made to ameliorate the conditions in prisons and to improve their sanitary arrangements. The disclosures regarding the treatment of Dreyfus on Devil's Island call for the most earnest investigation on the part of the French people. Whether guilty or innocent, a system that would permit of barbarities such as were practiced upon this individual for five years should be brought to an end. If Dreyfus had been guilty of the crime charged, his prompt execution after a military trial would have been justifiable, but to confine him in such a place as Devil's Island with all the tortures that he endured, both from the climate, want of air, and insufficient food, is a depth of degradation to which even a military system ought not to sink.

ERRATUM.

Albert Abram's article on "Diagnosis of Extra-Pulmonary Coughs" in the August issue of MEDICINE, page 624, should read "tussive zones" in place of "tissue zones."

ABSTRACTS.

MEDICINE.

A New Stain for the Gonococcus.—

R. G. Schnee, in the *Bulletin of the Cleveland General Hospital* for April, 1899, says the chief diagnostic features of the gonococcus are arrangement in pairs, having the adjacent sides flattened or concave. They are of relatively large size, and are found within the protoplasm of the pus cells around the nucleus. They decolorize by Gram's method, which is not true of other pus cocci.

Owing to the lack of uniformity of results by Gram's method and the necessity of quite an amount of technical ability in its use, the following new stains are recommended for routine work. Although in well marked cases of gonorrhea the gonococci are easily shown by staining with methylene blue, these stains are more rapid and more easily handled. In cases of vaginitis and suspicious leucorrheal discharges they meet a long-felt want. Where large numbers of other organisms are present and gonococci are relatively few in number, the methylene blue cannot be depended upon at all, and Gram's method is not satisfactory. In just such cases either of these stains, if used properly, will show the organism, if present, beautifully differentiated. The preference would probably be given Pick's solution, as it will keep well and is more easily prepared. This is made and used as follows:

Ziehl's carbol fuchsin	15 drops.
Concentrated alcoholic solution of methyl blue	8 drops.
Distilled water	20 Cc.

Stain cold for ten seconds, wash with water, dry, and mount. The gonococcus will be stained a deep blue, other bacteria a light blue, cell nuclei a still lighter blue, and protoplasm pink.

The second stain is recommended by Lanz and should be freshly prepared, though it has been used for six weeks after preparation. Formula:

Saturated solution of fuchsin in two-per-cent carbolic acid (aqueous)	10 Cc.
Saturated solution of thionin in two-per-cent carbolic acid (aqueous)	40 Cc.

Stain without warming from one-fourth to one-half minute, and wash with water. The gonococci are stained by the thionin, the

cell protoplasm by the fuchsin, and the nuclei by both colors at the same time.

If these solutions are allowed to act too long, the desired result is not obtained.

Typhoid Fever Bacilli in the Urine of Typhoid Fever Patients.—

N. B. Gwyn, in the *Johns Hopkins Hospital Bulletin* for June, 1899, states that Bouchard in 1881 showed that bacilli were present in the urine in 50 per cent of typhoid fever patients. Since then numerous writers have referred to the subject, the consensus of opinion at the present time being that in quite a high percentage of cases of typhoid fever, typhoid bacilli are present in the urine. When found, they are usually free from admixture of other germs and are often so numerous as to make freshly voided urine turbid. In those cases they may be detected by a simple cover-glass examination. They appear generally in the second or third week of the infection, and the organism may persist for months or years, multiplying in the bladder, the urine apparently being a suitable medium for their growth. These cases often show evidences of cystitis and marked renal involvement, and occasionally only the characteristics of an ordinary febrile urine. The presence of bacilli has no prognostic importance, and their disappearance or persistence without inducing local change is the rule. Irrigations of the bladder with bichloride of mercury and internal administration of urotropin, thirty or sixty grains of the latter, quickly removed the bacilli in six cases.

One of the cases reported by Gwyn was that of a chronic cystitis of four years' duration following shortly after an attack of typhoid fever. In this case pure cultures of the typhoid bacilli were found in the bladder. The number of bacilli was estimated by the writer in one of his cases at five hundred million per cubic centimeter. The daily amount of 1000 cubic centimeters of urine would thus contain five hundred thousand million organisms. According to Petruschky's calculation, such a urine, if diffused in ten cubic meters of water or sewage, would give fifty thousand colonies of bacilli to the cubic centimeter.

The Symptoms of Aortitis.—

C. F. Hoover, in the *Columbus Medical Journal* of June 27, 1899, says pain may have the same distribution as found in any case of angina pectoris. It may be restricted to the precordial area, or it may extend into the arms, forearms, and fingers, and epigastrium;

the pain reaching along the sternocleidomastoid muscle is not uncommon. In such instances, if the belly of the muscle be pressed between the fingers, it will be found to be sensitive.

The hammer-stroke pulse—a term originated by Bamberger—accurately describes the sensation experienced by the patient, at the same time suggesting the physical cause of the pain. The aorta is dilated and inelastic. There is a sharp diastolic impact of the aortic valves, and the pain is felt by the patient beneath the sternum, radiating into the scapular region.

Cough may be dependent upon exercise, or diffuse bronchitis—a frequent accompaniment of chronic aortitis. The severe fits of coughing are apt to occur in the early hours of the night, within a short time after the patient has assumed the horizontal position.

The attacks of asthma come on in the early hours of the night, just as the patient is getting into his first slumber. He is suddenly seized with a sense of pressure over the anterior thorax, and suffocation, and sits upright, struggling for breath. If a physical examination is made at the time, one will detect no evidences of obstruction to the entrance or exit of air in the bronchial tract.

Paresis of the left vocal cord may occur, owing to the proximity of the recurrent laryngeal to the seat of the disease. In some instances signs of constriction about the larynx are the most prominent symptom. Bucquoy reports a case in a young man who complained only of globus hystericus, but died suddenly in about two weeks from acute aortitis.

A Case of Acromegaly.—

W. L. Lackey, in the *Philadelphia Medical Journal* of July 22, 1899, reports the case of a man aged 22, colored, unmarried, a farm laborer, whose trouble began when he was 13 years of age. At that time he suffered from severe pain, which was attributed to rheumatism, and he was finally forced to take to his bed, where he remained for two years. At this time he began to grow in stature and his hands increased to a remarkable size. During all this time he suffered much from thirst and drank large quantities of water. The height of this individual is eight feet six inches, and the hand is so much enlarged that the hand of an adult just covers the palm. The father of this individual was a rather large man, but well proportioned. The mother's father is said to have been a giant, requiring an extra large saddle, which had to be made to order; he wore a No. 13 shoe. The relation of gigantism to acromegaly is illustrated in this case, which appears to be that of the tallest individual here-

tofore measured. Owing to the ankylosis of the hip- and knee-joints, it is necessary to measure the height of the individual in the sitting posture. Control measurements made upon normal individuals show that this method of measurement is correct within half an inch, so that the height of the individual described by Lackey is within half an inch of the figure given.

The Pathology of Alcoholic Multiple Neuritis.—

J. H. Larkin and S. E. Jelliffe, in the *Medical Record* of July 8, 1899, report a case of alcoholic multiple neuritis, with an autopsy. Their investigations justify them in drawing the following conclusions of the pathology of this affection:

In fatal alcoholic multiple neuritis grave variations from the normal structure (equivalent picture of Nissl) of the ganglion cells of the anterior and posterior horns, the columns of Clarke, the nucleus of Stilling, and the nuclei of the medulla, are always to be found when studied by appropriate methods.

These cytological variations are characterized by their extreme polymorphism. They may consist of simple swelling of the ganglion cell or its chromatin particles; fine granular disintegration of the chromatin; destruction of the chromatin; central, peripheral, perinuclear, and general chromatolysis; wandering of the nucleus to an eccentric position; and destruction of the achromatic structures to complete disintegration of the cell.

To what extent these lesions are due to the direct action of the alcohol on the molecular structure of the ganglion cell (primary), or the degeneration of the peripheral extensions of both sensory and motor neurons (secondary), cannot be accurately determined. The conclusion drawn is that the peripheral degeneration is the much more important one of the two.

The best hypothesis yet offered to account for the degeneration of the cells of the column of Clarke is that of Van Gehuchten, who assumes that the ganglion cells of a nervous chain exercise a trophic action one upon the other, the suspension of which produces a chromatolysis and disappearance of the corresponding cells.

Deglutition Tic in a Hysteriac.—

Paul Hartenberg (*Revue de Psychologie*) reports a case of a man 34 years old, of a neuroarthritic temperament. In 1899 he experienced the sensation of a ball ascending from the epigastric region to the throat. Treatment removed this symptom, and he remained well until 1896, when he fell in the street without losing conscious-

ness, complaining of oppression and difficulty in breathing. Shortly after this he experienced a sensation of having something in the pharynx which required him to swallow. This sensation and the act of swallowing recurred at more or less regular intervals. Examined in 1897; the symptom still persisted. While the author pronounces the case one of hysteria, he says that the stigmata of this condition were absent, the patient not presenting anesthesia or narrowing of the visual fields. That a tic of muscles of the throat is exceptional the author admits, but thinks the case fulfils the definition of tic of Guinon, which is: "A convulsive movement, habitual and constant, due to the involuntary contraction of one or more muscles of the body, which reproduces often and abruptly certain reflexes or automatic movements."

The Remote Prognosis of Pericarditis.—

J. H. Sequeira recently read before the Medico-Chirurgical Society of London (*Medical Record*, July 18, 1899, p. 107) a paper based upon the recent experimental work of Barnard and Leonard Hill. They showed that the pericardium is a support to the heart during muscular exertion. Sequeira took the ground that this fact required to be considered in our prognosis of pericarditis, as a softened and dilated pericardium would not support the organ, and consequently the heart might fail. On the other hand, if the pericardium became dilated and adherent to the chest wall, it would lead to failure of compensation; but if the sac was not dilated, adhesions would be of little importance. He reported the history of 130 cases of acute pericarditis, 100 of which he had personally examined, many of them at frequent intervals. They support his conclusion that the amount of dilatation of the pericardium effects the remote prognosis of acute pericarditis, and that whatever augments the labor of a heart working in a dilated pericardium tends to impair the power of compensation.

A Case of Traumatic Diabetes.—

Von Gadden, in the *Friedreich's Blätter für Gerichtliche Medicin und Sanitäts-Polizei*, vol. 50, part I, describes the case of a man who received a fall of about twelve feet, striking upon the head, with a probable fracture of the base of the skull. The fall was followed by extreme weakness, sleeplessness, and loss of flesh. Since the fall there has been great thirst, and seven per cent of sugar in the urine. The author attributes the severe mental symptoms to the diabetes, and the latter to the concussion of the brain.

Diabetes may follow traumatism of any part of the body; cases are reported after injuries to the spine, the sacral region, and abdomen. In 212 cases of traumatism of the head, Higgins and Ogden found two cases of glycosuria, but only two showed a permanent glycosuria from the date of injury. The author is of the opinion, based upon a study of six cases of his own and forty-four gathered from literature, that there is a direct causal relation of traumatism and diabetes.

Sanatoria for the Consumptive Poor.—

W. H. Jamieson, in the *Montreal Medical Journal* for August, 1899, says that sanatoria for the consumptive poor have become a necessity. It is a fact that there are many lives sacrificed for want of these special institutions, where all the conditions necessary for the successful treatment of pulmonary tuberculosis can be obtained at slight cost. Not only are lives saved by treatment in sanatoria, but the spread of tuberculosis is checked to a considerable extent by the isolation of these cases. Under existing circumstances the poor suffering from early tuberculosis can remain at home and there receive inadequate treatment, or admission to a general hospital can be obtained and the patient kept in a ward with patients suffering with other diseases. Either of these alternatives is objectionable, not only on the score of doing nothing for the patient, but of spreading the infection.

A properly conducted sanatorium for the consumptive poor, with accommodation for one hundred or over, in a suitable locality, can be run at a cost of seven dollars per week per patient. The sanatorium should only receive those in whom the chances of cure or improvement are good. The far-advanced, hopeless cases should be cared for in a separate institution, but not in the wards of a general hospital.

The Radiograph in the Diagnosis of Chest Pains.—

Pierre Merklen, in *La Presse Médicale* of July 8, 1899, reports two severe cases of intercostal neuralgia, complicated by irritation, extending down the arm. The pain was of the character which accompanies neuritis, being continuous with paroxysmal exacerbations. In both cases treatment was entirely ineffectual. In both the radiograph gave diagnostic results. In one there was spondylitis of the upper dorsal region, and in the other there was an aneurism of the aorta. The writer thinks that we have in this method of exploration a definite means of diagnosis in

obscure chest pain and disturbances of respiration, and that it should invariably be employed. While the interpretation of what is seen by the x-ray is difficult, comparisons may be made with radiographs of normal chests, which permit of considerable exactitude in determining intrathoracic conditions.

The Pilocarpine Habit.—

The *Pharmaceutical Era* of July 20, 1899, describes an example of this queer habit. The individual who possesses this unique appetite began some years ago the use of morphine, to which he added later cocaine; a third was added, namely, pilocarpine. His habit was to take an injection of pilocarpine, which was followed a half-hour later by an injection of two grains of morphine, and in another half-hour a grain of cocaine. It is stated that the victim is a physical and mental wreck.

The Bubonic Plague in Mongolia.—

J. Matignon publishes in the *Archives de Médecine et de Pharmacie Militaires*, No. 6, 1899, a very interesting article on the bubonic plague in North China. Mongolia begins north of the Chinese wall; the majority of the inhabitants are Chinamen. In a valley called So-len-ko the plague has prevailed for the past nine years. It appeared in 1888 and has shown itself each year since. In 1896 it claimed ninety-two victims, but in 1897 the deaths fell to twelve.

A Disease Resembling the Plague.—

Dr. Favre describes in the *Zeitschrift für Hygiene und Infections Krankheiten*, vol. 30, part III, a disease which closely resembles the plague. It is found in Akscha, a province of Russia, near the Chinese frontier. The clinical appearances of the disease are identical with those of the plague, but it is never epidemic, and the cases always appear in small groups as house epidemics. The disease is known as "sarbaganpest," and has not yet been scientifically studied.

SURGERY.

Resection of the Sigmoid Flexure for Idiopathic Dilatation of the Colon.—

R. H. Fitz, in the *American Journal of the Medical Sciences* for August, 1899, says that increase in the size of the large intestine at times occurs without any obvious organic or mechanical cause. It leads to fecal accumulation sufficient to produce distress, and may

lead to an early fatal termination. The most constant symptom is constipation, and the most positive sign is abdominal distention. There are two types of this affection: in one the disturbance begins early in life, even in infancy; in another it becomes manifest only at an advanced age. He describes a case of a girl 14 years of age who was under his care at the Massachusetts General Hospital. She had been constipated all her life, and the enlargement began when she was two years old, and had continued to increase in size up to the time of her admission. There were no other complaints, and she was well developed and sufficiently nourished. The abdomen was enlarged, measuring thirty-one inches in circumference. It was tympanitic throughout, except in the right iliac fossa, where there was a diffused dulness. The surface was in places slightly irregular and ridged, from peristalsis of the underlying intestine. On palpation the abdomen was everywhere soft and without tenderness. The bowels were kept open by enemata, and though several evacuations might occur daily, there was no material diminution of the enlargement. The injection of five pints of water caused dulness on percussion in the left half of the abdomen.

In the above case the author says that if it is admitted that in certain cases a congenital cause for the dilatation may have existed, it must be recognized also that absolute evidence on this point is lacking. He discusses the views that have been held regarding the origin of idiopathic dilatation. It may be due to defective expulsive power. As the lower portion of the bowel, especially the sigmoid flexure, becomes enlarged, an acquired mechanical impediment to the emptying of the descending colon, and perhaps of other portions of the large intestine, is established, giving rise to dilatation and to hypertrophy of the muscular coat.

In comparing the histories of cases of chronic phantom tumor and of idiopathic dilatation of the colon, the similarity of the symptoms of the two infections is beyond question. In each there is marked constipation, frequently leading to the retention of feces; in each there is a tympanitic distention of the abdomen often to an extreme degree, and present throughout a series of years, although subject to variations in size, even to a return of the normal shape in anesthesia. Phantom tumor is not necessarily limited to persons of hysterical tendency, and the patient with the affection may be either hysterical or neurasthenic.

A patient aged 37 gave a history of abdominal distress and permanent ill health since 15 years of age. On examination, the abdomen was found enlarged in its lower segment, but the waist was

narrow and the epigastrium flat. Anesthesia caused a disappearance of the tumor, but no diminution in the circumference of the abdomen. Purgatives produced watery evacuations, but no alterations in the size and shape of the abdomen. A median incision was made, through which the enlarged sigmoid flexure bulged. There was no organic stricture or fecal impaction. The vermiform appendix was removed. This giving no relief, the abdomen was later reopened and the enlarged sigmoid flexure resected. Convalescence progressed favorably and without interruption. This case presented the essential characteristics, even in its reaction to anesthetics, of a phantom tumor occurring late in life, in a woman of pronounced neurasthenic type. It likewise showed the features of idiopathic dilatation and the colon free from obvious congenital peculiarities, and having as its sole conspicuous antecedent a constipated habit, but no history of fecal impaction at any time. The phantom tumor proved to be a dilated colon. The history of such cases shows that even under medical treatment the deformity and disability are permanent, generally progressive, attended by suffering, and ending usually in death. The resection of the dilated sigmoid flexure takes from the abdomen the chief cause of distention and removes a fecal reservoir.

Postanesthetic Paralysis.—

Turney, in a paper read before the Society of Anesthetists, states that but little attention has been given to the subject of postanesthetic paralyses in England. These form a heterogeneous group, difficult to arrange in anything like logical order. Those of central origin are very uncommon, and are similar to paralyses which occur in other conditions. Their connection with the anesthetic is indirect. Cerebral hemorrhage may occur during anesthesia and be precipitated by it. If death occurs early from severe shock, in the absence of a thorough post-mortem it may be attributed to the poisonous effects of the anesthetic. Thrombosis, with softening, may occur in those with highly atheromatous arteries. Functional affections occasionally take their start from the administration of an anesthetic and the associated mental excitement.

Injuries to the peripheral nerves form by far the most important group of paralyses due to anesthesia. For the most part they are avoidable, and are largely due to the practice of dragging the patient's arm forcibly above the head, either for convenience in feeling the pulse or to get the limb out of the way of the operator. The forms of paralysis which follow are: (*a*) Erb's palsy: brachialis

anticus and biceps, deltoid and supinator longus, with sometimes the spinati. Caused by pressure between clavicle and rib, or in the latter case possibly (involvement of spinati) between clavicle and scalene muscle. (*b*) Total lesion of brachial plexus, including all the muscles of the shoulder girdle. In this case the fifth and sixth roots are compressed between rib and clavicle, while the seventh, eighth, and first dorsal may either suffer at the same spot (and this is more probable) or they may be injured by being stretched over the head of the humerus as it descends into the axilla during abduction of the arm. In several of these cases there have been pupillary symptoms pointing to a lesion of the first dorsal root at a point much nearer to its origin than either of those just considered. It has been suggested by Buddinger that in these cases, in consequence of the abduction of the arm, there is an element of traction which acts on the nerve root at its exit from the spinal canal. An ascending neuritis has also been proposed, but the sign has been seen at too early a stage for this to be a possible explanation. (*c*) Paralysis of one or both serratus magnus muscles, with or without Erb's palsy. The pressure on the long thoracic nerves in this case is probably as they lie on the scalene muscle and before they come into relation with the rib.

To avoid these accidents the patients' arms must not be raised forcibly above their heads. If this is necessary, the arm should be carried as much as possible in a forward direction, and the head, supported on a pillow, should be inclined to the side on which the arm is elevated. While these paralyses are generally followed by prompt recovery, occasionally recovery is long delayed or there is a permanent paralysis.

Device for Washing Out the Pelvis of the Kidney.—

L. B. Tuckerman, in the *Cleveland Medical Gazette* for July, 1899, has devised a simple method of irrigating the pelvis of the kidney. It consists of a No. 6 French catheter, an ounce bulb, and a common exploring aspirator with the ordinary three-way stopcock, all connected by rubber tubing. The catheter is introduced in the ordinary manner through the Kelley speculum. It is necessary to use a stylet in the catheter, passing the catheter up as far as possible without force, then withdrawing the stylet a couple of inches, passing the catheter farther, and so on, until the pelvis of the kidney is reached; then by exhausting the contents of the pelvis of the kidney, they can be drawn into the bulb and inspected. From the amount of fluid which is drawn into the bulb we may

judge of the capacity of the pelvis of the kidney. If pus, and it be deemed advisable to wash out the kidney, the bulb can be detached from the catheter, filled with boracic acid solution or such other disinfecting fluid as the practitioner may deem best, and, by reconnecting and reversing the stop-cock, the fluid can be injected into the pelvis of the kidney, again withdrawn, until, as in washing other cavities, the fluid comes away clear. To medicate the pelvis of the kidney, the bulb can be filled with the proper quantity of medicament, which in its turn is forced into the pelvis of the kidney, where it is left by the withdrawal of the catheter.

This device the author has used recently in the case of a woman afflicted with pyelitis, with the right kidney plainly palpable. The right ureter was occluded, or nearly so. In two sittings he succeeded in passing a catheter up to the pelvis of the kidney, and in the third sitting dilated the ureter to No. 8 French. From the pelvis he exhausted an ounce of pus, washed with boracic acid as above described, and filled the cavity with a one-per-cent solution of ichthyol. At the next sitting the ureter was found unobstructed and the capacity of the cavity of the pelvis of the kidney reduced to about three drachms. The patient is a hopeless case so far as a cure is concerned, as microscopic examination of the pus from both ureters shows tubercular bacilli, but she was improved after the washing out of the kidney. In a case of pyelitis of gonococcal origin, it seems rational to treat the pelvis of the kidney by flushing.

The Renal Catheter in Diagnosis.—

Howard Kelly, in the *Johns Hopkins Hospital Bulletin* for June, 1899, stated that the instruments devised by Dr. Neumann, of Goben, and Dr. Harris, of Chicago, apparently would make the employment of renal catheters quite useless. Some of the most obscure cases are those with vague but distressing pain in the side, especially the right, and one may long be in doubt as to whether the pain is renal, hepatic, intestinal, or hysterical. By means of the ureteral catheter he has been able to include or exclude the kidney. When the upper end of the catheter presses upon the pelvis of the kidney the patient will sometimes tell us that we are touching the very point where she had the pain. Further than that, he has been able to produce an attack of artificial renal colic by injecting a solution of boracic acid into the kidney through the catheter. Again, a patient who has been suffering from renal colic will often have afterwards an attack of genuine renal colic following the treatment.

He has had two cases recently that are interesting in this connection. In one there was a tumor below the ribs on the right side. Some five or six consultants gathered together to determine what it was, some thinking it to be a tumor of the gall-bladder. He injected fluid, and the patient at once complained of pain in the back, quite as severe as a genuine attack of renal colic, so they were satisfied that the kidney was in its normal position.

In the other case the condition was so exactly like a large floating kidney that the author unhesitatingly made that diagnosis; nevertheless, he passed in the catheter first, and produced an attack of colic. The patient located the colic in the back. A median incision was made to examine the opposite kidney. Instead of cutting posteriorly, he cut in the median line and found by the hand that the left kidney was normal, but on examining the other side found an enlarged gall-bladder in front of the kidney. The induction of the renal colic and location of the pain by the patient gave the correct diagnosis.

First-aid Package in Military Surgery.—

Nicholas Senn, at the meeting of the American Surgical Society (*Medical Record*, July 15, 1899), stated that the value of first-aid antiseptic occlusive dressing was clearly shown during the Russo-Turkish war. The package for field use and emergency work suggested by Professor Senn is composed of two pieces of lintin, a form of compressed cotton four inches wide and sixteen inches long, sterilized, and folded twice lengthwise; a teaspoonful of borosalicylic powder, in a small, waxed, aseptic envelope; between them a piece of sterile gauze forty-four inches square with two safety-pins, folded to correspond in size to the lintin compress; all of these articles wrapped in tin-foil; two strips of rubber adhesive plaster an inch wide and eight inches long, the whole to be sewed in an impermeable canvass or linen cover. In using the package the powder is applied to the wound and the lintin used as a compress, held in place by the strips of adhesive plaster and the gauze bandage over it. If two wounds are to be dressed at the same time, as is usually the case in modern warfare, the contents of the package are equally divided and used, which could be done without materially impairing the efficiency of the dressing. The slight hemorrhage in wounds inflicted by the small caliber bullet would soon saturate a part of the dressing, which by evaporation would convert the antiseptic powder and the cotton into a dry antiseptic crust, the very best protection for the wound against infection. Many military surgeons

have expressed themselves recently as being opposed to the employment of the first-aid package by any one except medical men. This position, Senn thought, would be found untenable during any great war, since the number of wounded would greatly exceed the working capacity of the limited number of surgeons.

The Best Method of Intestinal Anastomosis.—

J. H. Barbat, in the *Journal of the American Medical Association* of July 15, 1899, gives an experimental study of the results of different methods of intestinal anastomosis made in dogs. Circular interorrhaphy, he thinks, should always be the operation of election in restoring the continuity of the intestine, as it is the only method which restores the bowel to its natural condition, and it is the operation which should always be selected when no contraindication exists. His experimental work shows it is possible to make a safe and satisfactory end-to-end anastomosis. With practice a surgeon can, with nothing but a needle and thread, sew a divided bowel together and obtain a result which will almost equal that obtained by the use of the Murphy button. The button is superior to any suture method yet devised. The Murphy button and Frank coupler give the same anatomic result, but the button is safer than the coupler. Contraction following end-to-end anastomosis is usually due to faulty technique. A perfect Murphy button, properly introduced, is the quickest, safest, and most reliable means of uniting the severed intestine.

A New Rectal Dressing.—

J. R. Remington, in the *Chicago Medical Recorder* for July, 1899, speaks of the necessity of careful attention to the dressing and after-treatment in surgery of the rectum. Much of the pain and swelling which follow the application of a ligature or the cautery can be prevented by the use of properly constructed rectal tampons. If these are made of simple gauze or cotton, the pain attending their removal is considerable, the tender granulations are broken off, and there is considerable hemorrhage. They retard the healing and favor the absorption of septic material. The tampon devised by the writer consists of a central rubber tube three-fourths of an inch in diameter and four and one-half inches long. Covering and attached to this are layers of gauze and cotton sufficient to furnish a tampon of the desired size. The whole is then covered by sterilized sheet rubber. The advantages which he claims for such a tampon are that there is no pain on its removal and that it leaves the wound in a condition which makes defecation practically painless.

A Contribution to Crede's Silver Treatment of Wounds.—

Myer (*Deutsche Militairärztliche Zeitschrift*) reports a number of cases of wounds treated with argentic citrate and lactate. Itrol was used as a dusting powder for wounds, and Crédé's soluble silver was used in the 1-to-5000 albuminized solution for internal administration. Argentic lactate was employed in solutions of 1 to 2000 for irrigation. Crédé's ointment, itrol suppositories, silver soap, and silver catgut were used. This silver treatment of wounds was followed by excellent results, and the author recommends it because of two important points in its application; namely, it admits of less strict antisepsis, and permits of simpler treatment of wounds. In two cases of general infection the inunction of silver ointment was followed by an improvement in all the symptoms. The cost of the silver treatment of wounds is not greater than that of other methods, which permits of its general employment in dispensary practice, for which it seems to be especially adapted.

Curled Horsehair in Place of a Scrubbing-brush.—

W. S. Forbes, in the *Pennsylvania Medical Journal* for July, 1899, says that ordinary curled hair forms one of the best mechanical devices for cleansing the skin that has yet been discovered. In its preparation about three drachms of curled hair is employed, and this is easily shaped by the hands into a loose pad about the size of the hand. When desired, the flattened mass may be held together by stitching with sterilized silk, catgut, or other aseptic material, but this is optional. When once fashioned, it will hold its shape without change. It cannot cut or tear the skin, and it is easily cleansed with boiling water before and after each surgical operation. A solution of bichloride of mercury, 1 to 100, and steam to 100° do not act upon it. It may be kept in alcohol after being sterilized, and is thus always ready for use. It is cheap and efficient, and is far superior to the scrubbing-brush of tainted memory.

Tenotomy as a Preliminary to Amputation.—

B. B. Davis, in the *Western Medical Review*, calls attention to the fact that muscles contract unevenly after amputation. As a result, instead of the muscular stump forming one plane as it is cut, there are several, depending upon the distance at which the muscle is severed from its origin. This results in the irregular stump, or else they must all be successfully trimmed off, corresponding to the plane of the one that is contracted most. The writer makes no claim to originality, but he does not think that it has come into general use.

His attention was first directed by Dawbarn's suggestion to cut the hamstrings before amputating at the hip-joint. The value of this procedure impressed him so favorably that he at once began to apply the principle not only to disarticulation of the hip, but at the shoulder, and amputations of the thigh, leg, arm, and forearm.

The Examination of the Blood in Reference to General Anesthesia.—

Hamilton Fish, in the *Annals of Surgery* for July, 1899, says that everything that adds to the safety of the patient during anesthesia is worthy of careful study. In the blood we have a fairly accurate index of the patient's general condition. Its study frequently enables us to say when and when not to operate. He regards reduction of hemoglobin as one of the most important contraindications for anesthesia. In persons whose blood presents a hemoglobin percentage of 50 or less, the anesthetic vapor produces a quickly increased pathological condition by a forced abstraction of oxygen. In this way the hemoglobin no longer acts as an oxygen carrier, and these individuals quickly show signs of collapse. He thinks it is a safe rule never to produce anesthesia in a person whose blood shows less than 50 per cent of hemoglobin.

Dangers of Hydrogen Dioxide.—

G. W. Spencer, in the *Therapeutic Gazette* of July 15, 1899, says that this apparently innocent substance is not always free from dangerous effects. The "explosive" manner to which the gas is sometimes given may distend and rupture tissues and carry infection into the cellular tissues for a considerable distance. He describes a case of mammary carcinoma in which the injection of a small sinus with the peroxide of hydrogen resulted in opening up and carrying infection into the axilla. A number of stitch abscesses treated by the same substance resulted in carrying infection between the muscular layers, necessitating numerous incisions and a thorough disinfection of the area involved. Hatch and Janeway are reported as having noted untoward effects from the use of hydrogen dioxide, the former in treating an abscess beneath the rib, and the latter in treating two cases of temporary hemiplegia, resulting from the injection of a wineglassful of peroxide into the sac of an empyema.

Extraction of Ureteral Calculus by Laparotomy.—

Desguin (*Annales de la Société Belge de Chirurgie*, May, 1899) describes the case of a man 34 years of age who had suffered from paroxysms of abdominal pain since his fourth year. Examination

of the abdomen showed a localization of tenderness somewhat above McBurney's point. At this point a small induration could be felt, presenting a certain amount of mobility. The diagnosis lay between a ureteral calculus and appendicitis. The absence of distinctive urinary findings lent additional obscurity to the case. The abdominal incision was made to the right of the rectus muscle. On exposing the ureter a calculus was found, which was removed through a longitudinal incision. It was irregularly triangular in shape, 26 x 23 millimeters, and weighed ten grammes.

Treatment of Fracture of the Patella.—

W. J. Means, in the *Columbus Medical Journal* of July 5, 1899, says that the non-operative treatment of fracture of the patella is unsatisfactory; it leads to a long confinement and is followed by much functional disability. The methods heretofore devised for maintaining apposition of the fragments by external appliances are unsatisfactory. By opening the joint and fully exposing the fracture, the parts can be accurately sutured in such a way that they will be maintained in apposition, with an ultimate bony union. This method often saves months of confinement. The suture material should be absorbable, such as catgut or kangaroo tendon. Massage treatment begun at an early date is an important factor in restoring activity of the joint.

THERAPEUTICS.

Liquid Air.—

A. C. White, in the *New York Medical Record* of July 22, 1899, writes of the application of this substance in medicine and surgery. Its effect on microorganisms was studied; pure cultures of anthrax, diphtheria, and typhoid bacilli were exposed to the action of liquid air, some in sealed tubes and some in direct contact, the germs apparently not being affected in any way by the extreme cold. About three-fourths of an ear of a rabbit was frozen, and a small piece of the tip was broken with the fingers without pain or hemorrhage. Within ten minutes after the withdrawal of the air the circulation was reestablished, with hemorrhage at the point where the ear had been broken off. The ear remained perfectly normal for about five days, when it began to swell, and at the end of two weeks half of the frozen part had shriveled and dropped off. The author has used frozen air in the form of a spray and by means of a swab

dipped in the liquid. After external application the skin becomes anemic, and in less than a minute's time, by means of the spray, the part is frozen. Even after the tissues are thoroughly congealed the circulation returns in a few minutes, and there is no injury to the tissues providing the part is not at the end of an extremity, such as a finger-tip. Only a slight burning or tingling is experienced in the part, which is followed by complete anesthesia. The absence of hemorrhage in the frozen part is an advantage.

The writer has performed several operations with the liquid air as an anesthetic; in one case an infected bursa was cleaned out, and in another he opened up the palm of the hand. In operating, he thinks it is better to apply the liquid air intermittently, excepting, of course, where only a single incision is required. In varicose ulcers, chancroid and chancres, the liquid air was found to be an excellent application.

In a number of cases of sciatica and of herpes zoster, one case of intercostal neuralgia, and one of facial neuralgia, liquid air has been tried. In every one relief was obtained. The liquid was applied to the spinal end of the nerve. In none of the nerve cases was the air used more than once, and in no case was the application severe enough to cause blistering or sloughing.

The prospects for the use of liquid air in lupus are encouraging. One case of lupus erythematosus involving the frontal region, both ears, and one side of the face was put under treatment two months ago. After two treatments the affected area desquamated, leaving the derma in a healthy condition, slightly red, and no eschar. This was an obstinate case which had been under treatment for a long time. In carcinoma and epithelioma the author is unable to express a positive opinion owing to a lack of experience.

Septicemia Treated with Normal Salt Solution.—

C. E. Edson describes in the *Boston Medical and Surgical Journal* of July 27, 1899, the case of a patient who had two typical attacks of follicular tonsillitis. During the year he was under observation these were identified as due to streptococcic infection. On the fourth day after the second attack he became rapidly worse, the pulse rose to 110, and the respirations from 35 to 40, but the temperature did not increase above 101°. An area in the middle upper lobe of the right lung had a heightened percussion note and bronchial breathing. The trouble in the lung did not spread to any extent, but there were general pains which rapidly increased, and the knees, ankles, hands, limbs, and shoulders were successively

invaded. There was moderate swelling, which appeared to be periarticular. There was tenderness of the muscles; insomnia and delirium were marked. On the tenth and eleventh day of the disease the condition of the patient was desperate. The limbs were helpless from pain, and the temperature remained from 101° to 102°. The pulse ranged from 110 to 118, and the respirations about 35. The mental condition was clouded and the patient had no recollection of events for the past ten days. At this time sixteen ounces of hot sterilized salt solution was injected into the subcutaneous tissues of the breast. This was followed by slight improvement and an increasing flow of urine, which was nearly double the amount that had been passed for the previous twelve hours. The next morning twenty-four ounces was injected into the median cephalic vein. This injection caused great distress, a pulse of 120, and respiration of 40, with marked excitement for a short time and profuse perspiration. Two hours later there was a sharp rigor lasting twenty minutes, the temperature rising from 100.6° to 103.8°. After this there was a fall in the temperature and an improvement in the general condition of the patient. A third injection was given subcutaneously, and was followed by some improvement and no disturbance in the general condition. Convalescence was tedious, but was ultimately followed by a complete recovery.

Cold Baths in the Treatment of Delirium Tremens.—

Maurice Lettulle, in *La Presse Médicale* of July 8, 1899, describes the case of a man, 33 years of age, admitted to the Hôpital Boucicaut with a severe attack of delirium tremens, which had begun four hours before. At the time the patient was in intense excitement, but was capable of answering questions. The muscles of the trunk were in a constant tremor, and the limbs were thrown about with great violence. A camisole was applied, which, instead of calming, seemed to aggravate the excitement. The temperature on admission was 104.5° F., and the face and extremities were cyanosed. Seven hours after the beginning of the attack he was given a cold bath of 64.4° F. He remained in the bath for thirty minutes, and at the end of that time suddenly passed into a state of collapse, with the pulse remaining at the same rate as when he entered the bath, 108. In the meantime the temperature had fallen to 92.6°. This was ten minutes after the bath had been given. From this extremely low point the temperature gradually improved until twelve hours after the bath had been given, when it was normal. The patient did not have a return of the delirium. The

author enters into a consideration of the literature of the treatment of delirium tremens by cold baths. He regards it as a distinct improvement upon the use of opium, chloral, or digitalis. The bath in the case described was administered for too long a time, but he thinks it is justified in these very grave cases, and in the case in question it was followed by a lowering of the temperature and a disappearance of the delirium.

Infusion of Salt Solution Combined with Oxygen Inhalations in the Treatment of Pneumonia.—

C. A. Penrose, in the *Johns Hopkins Hospital Bulletin* for July, 1899, reports three cases of pneumonia treated by this method. All of them were *in extremis*, and two of them died. He claims that the injection of salt solution in pneumonia will aid in its treatment, if used by those familiar with the significance of the second pulmonic heart sound. If this is altered in quality, bleeding should be resorted to. In his judgment the hypodermic injection is preferable to the intravenous transfusion, as by this method toxins in the blood are diluted, delirium is relieved, and elimination is promoted through the sweat glands and kidneys. It lowers the temperature and stimulates the heart, and, what he regards as of still greater importance, seems to render the patient much more susceptible to the influence of oxygen.

In giving oxygen, it is passed through a wash-bottle containing a pint of hot water, in which has been placed a drachm of a mixture composed of:

Creosote (beechwood)	½ ounce.
Oil turpentine	½ ounce.
Comp. tr. benzoin	2 ounces.

The gas is given by a funnel suspended in front of the patient's face by a framework, thus avoiding the use of a nozzle for the nose and mouth. This, he claims, is the preferable way to administer the gas; it allows the patient to rest and often sleep. The effect of the inhalation mixture is to clean the mouth and tongue and promote expectoration.

Gelato-glycerin Bougies in the Treatment of Earache.—

G. L. Richards, in the *Laryngoscope* for August, 1899, states that for some time he has been using gelato-glycerin aural bougies in the early stages of earache from whatever cause. They are of especial value in the early stages of acute otitis media and in acute otitis externa. Besides being a medium for the exhibition of medi-

caments, the glycerin itself is curative, as it tends to deplete the engorged capillaries. After the bougie is inserted the ear should be filled with cotton or gauze, and a hot-water bottle applied to the affected ear. Cases which have gone beyond the early stage get no relief, but many cases of acute ear trouble yield promptly to this treatment, avoiding severe inflammation and consequent damage to the ear.

Any druggist can prepare these bougies according to the following working formula:

℞	Acid carbolic	7 minims.
	Fluid extract opium	6 minims.
	Cocaine	3 grains.
	Atropine sulphate	3 grains.
	Aquæ	52 minims.
	Gelatin	18 grains.
	Glycerin	158 grains.

To make 42 bougies.

They may be molded like urethral bougies and then cut into three sections. After making they are covered with lycopodium powder and kept in a bottle to exclude the air, as they are hygroscopic.

A Novel Method of Anesthesia.—

The *Cleveland Medical Gazette* says editorially that to Dr. G. W. Crile belongs the credit of the discovery of the property of cocaine, when injected into the nerves, of producing complete anesthesia throughout the extent of the nerves peripheral to the site of injection. In an amputation of the thigh Dr. Crile successfully exposed the anterior crural, the external cutaneous, and the great sciatic nerves, and injected them with a half-per-cent solution of cocaine. This completely blocked all sensation in the parts to which these nerves were distributed, and the operation was performed without any pain whatever. The amputation was made three inches above the knee-joint. The pulse and respiration were not affected during the operation. The same editorial speaks of the observations of Bier, of Kiel, who injected cocaine into the membranes of the spinal cord, using a dilute solution from one-tenth to one-sixth of a grain. It is claimed that in this way the sensation of pain below the point of injection was completely abolished by reason of the analgesic effects of the cocaine upon the posterior spinal nerves. Plastic operations about the knee, ankle, and hip-joint, resection, and osteoplastic operation upon the femur and tibia, were performed without pain and with good results. It is stated that Bier has

experimented upon himself and others, and has noticed no untoward results from this novel procedure, except a slight and sometimes persistent giddiness following the withdrawal of cerebrospinal fluid on lumbar puncture.

Resinol.—

B. F. Gay, in the *Western Medical Review* of July 15, 1899, says the above title represents a salve which has been pretty thoroughly advertised in medical journals. The following prescription duplicates it perfectly:

℞	Sulphur sub.	gr. xxx.
	Acetanilid.	gr. xxx.
	Bismuth oxide.	gr. xxx.
	Plumbi acetas	gr. xxx.
	Pix. liq.	℥ xxxvj.
	White petrolatum.	dr. vj.
	Carmine, to color.	q. s.

M. Sig.: To be applied in the following conditions: As an antiseptic, antipruritic, and sedative in pruritus ani, dry form of eczema in children, piles, superficial burns of small areas, etc.

The liquid tar used in "resinol" is the acid tar of commerce, and can be replaced by the alkaline liquid tar of the British Pharmacopœia, which is non-irritating to delicate skins.

The above prescription will do everything that resinol can accomplish, although it may not be a *sine qua non* in all the conditions named, neither will any other salve. This prescription may be varied to suit the requirements of the physician, which is no small advantage when compared with a proprietary article like resinol, whose formula is supposed to be secret and whose printed directions are to be blindly followed.

The Treatment of Rheumatism.—

C. R. Marshall, in the *New York Medical Journal* of August 12, 1899, refers to the value of salicylic acid ointment in acute rheumatism. Unna, Ritter, and Ingra have shown that salicylic acid is freely absorbed by the skin, while salicylate of sodium is not. Arendt advises the following formula:

℞	Salicylic acid.	½ ounce.
	Oil of turpentine.	½ ounce.
	Lanolin.	½ ounce.
	Lard.	q. s. ad 3 ounces.

This ointment is spread on lint and applied to the joints, which are then enveloped in oiled silk and covered with a soft bandage. The effects of the salicylates are often shown in a short time, but no gastrointestinal symptoms occur. Arendt has treated many cases by

epidermic applications alone. In chronic rheumatism improvement may not occur until after the local applications have been continued for some time. In such cases Arendt uses the following formula:

℞ Salicylic acid ..... 5 drachms.
Alcohol ..... 3 ounces.
Castor oil ..... 6 ounces.

This is applied by soaking lint in the mixture and wrapping about the infected joints. The whole is then covered by some impermeable material.

Antitoxin Treatment of Diphtheria in Prussia.—

A. W. Willoughby, in the *Therapist* for July, 1899, says that there has been a decline in the mortality of diphtheria in Prussia since 1894 that cannot be explained by the improvement of sanitary conditions. From 1885 to 1894 the death-rate from this disease averaged 15.5 per cent to every 10,000 of the population. It fell in 1895 to 9 per cent, and in 1896 to 7.6 per cent; in 1897 to 6.2 per cent. This, he thinks, points to the general adoption of the antitoxin treatment of diphtheria in private as well as hospital practice. Hitherto the variable results of published experience have been open to the suspicion of having been drawn from a more or less limited number of selected cases, and in a disease the clinical diagnosis of which is often difficult series of cases may be gathered, treated by other methods, with apparently equally successful results. This explanation is inadmissible when so extraordinary a reduction in the mortality appears throughout the country concurrently with the introduction of a new mode of treatment, and increases *pari passu* with its more general adoption.

Irrigation of the Bowel in Summer Diarrhea.—

The *Therapeutic Gazette* of July 15, 1899, has a leading article upon the value of this method in treating diarrhea, and particularly cholera infantum. In obstinate cases two individual things should be done for the relief of the child, namely, the use of irrigation of the large bowel by plain water, normal saline solution, or water containing a small amount of boric acid; secondly, and even more important, the use of milk should be stopped for a period of from twenty-four to thirty-six hours. Beef juice and water should be given to allay the child's thirst. The temperature of the solution employed should be about 90°. The child should be placed in the lithotomy position, and the catheter, free from air and full of the irrigating fluid, should be gently inserted into the bowel as high as possible.

About a quart of fluid may be used at each sitting, and if it does not readily escape, a small tube may be passed at the side of that used for irrigation. The fluid container should be raised not to exceed two feet above the infant. If this rule is observed, and free egress allowed the fluid, no dangerous distention can occur.

Treatment of Paralysis Agitans.—

R. T. Williamson, before the Manchester Therapeutical Society, May 24, 1899 (*Medical and Surgical Review of Reviews*, June, 1899), expressed the hopelessness of these cases when he said that all that can be done is to make life more tolerable. Systematic open-air treatment is valuable. Williamson has tried strychnine, arsenic, iodide and bromide of potassium, calabar bean, gelsemium, and cannabin tannate without favorable results. Morphine hypodermically gives relief, but this treatment is objectionable in a chronic disease. Hyoscin is the only drug which he has found useful, and he feels sure of its power to relieve many of the troublesome symptoms. He prescribes one-fourth grain in six ounces of chloroform water, the dose being two teaspoonfuls, corresponding to $\frac{1}{96}$ grain of hyoscin hydrobromate. The dose may be increased to $\frac{1}{75}$ grain. In these larger doses the drug seems to diminish the trembling, uneasiness, and restlessness. After some weeks the drug loses its good effect, and it is then necessary to withdraw it for a time, after which it may be again renewed.

Potassium Iodide in Cerebrospinal Meningitis.—

A. J. Moody (*Merck's Archives*, July, 1899) says that in the severe or apoplectic form of this disease no method of treatment offers a hope of cure. In the milder forms potassium iodide is the only drug which has shown any power to modify the disease. It should not, however, be relied upon to the exclusion of other remedies which may make the patient more comfortable and enable him to resist the exhaustion which accompanies the disorder. He does not consider the known influence of iodide upon absorption a sufficient explanation of its usefulness, but thinks it has some quality which acts as an antidote to the toxins produced by the organisms, or it is unfavorable to their development.

Glycerin in Renal Calculus.—

Hermann (*Ther. der Gegenwart*, p. 214, 1899) reported to the Congress for Internal Medicine at Carlsbad on the treatment of eighty-five cases of renal calculus by glycerin. The result in these

cases was a passage of the stone in from six to thirty-six hours in thirty-one cases; in twenty-one cases there was subjective improvement; while in thirty-three the remedy proved quite inactive. Hermann claims that the mechanism of its action is due to the elimination of the glycerin by the kidneys, and that it serves to lubricate the urinary passages, and in this way directly favors the passage of the calculus. In no case did albumin appear in the urine when it did not exist prior to the administration of the glycerin, and in no case was a preexisting albuminuria aggravated. The eighty-five cases received in all 300 doses, varying from an ounce and a half to four ounces, diluted with equal parts of water.

Naftalan in the Treatment of Eczema.—

Rosenbaum (*Therapist*, July, 1899) says that this substance in burns and acute eczema has given good results, and he has been successful with it in the treatment of chronic eczema. In some cases it has cured where all other remedies have failed. In the occupation eczemas especially good results have been achieved. One of the cases detailed by the author was that of chronic eczema, which appeared like ichthyosis, of twenty years' standing. Various treatments had been employed, but no improvement had followed. After forty days' treatment with naftalan the patient was discharged cured.

Euphthalmine as a Mydriatic for Ophthalmoscopic Examinations.—

H. Darier, in the *Therapist* for July, 1899, says for ophthalmoscopic examination we need a mydriatic having a brief action and one which does not affect the power of accommodation. Cocaine is the drug most frequently employed for this purpose, but the dilatation which it produces is very inconsistent, and the effect upon the accommodation is occasionally marked. Its toxic effects are also not to be left out of account. Euphthalmine unites most of the advantages desired in a mydriatic in using the ophthalmoscope. Two drops of a five-per-cent solution produces in thirty-five minutes a maximal pupilary dilatation without appreciably affecting the accommodation, except for a slight dimness of vision caused by the diffusion of rays penetrating the pupilary orifice. The effects of the drug pass off completely in two or three hours.

The Treatment of Uric Acid Diathesis.—

A. C. Croftan, in the *Journal of the American Medical Association* of July 8, 1899, says that our present theories and treatment based thereon are largely empirical. The two most important indications

are a reduction in nuclein metabolism and a raising of the oxygenating power of the blood. To attain the first object nuclein-containing foods should be largely excluded from the diet. The uric acid case should be treated as an anemic one; iron and arsenic should be administered on the same lines that they are administered in chlorotic cases. In acute cases the inhalation of oxygen gas results in quick improvement. In six cases the writer thinks he has aborted the attacks of gout with oxygen, and has met with equally prompt results in uric acid headache and migraine.

A Mechanical Laxative.—

H. S. Upson, in the *Philadelphia Medical Journal* of July 22, 1899, says that the best remedial agent of this class is a product known as white liquid petrolatum, given by the mouth in doses of two or three ounces. Liquid petrolatum has a great advantage over olive or cottonseed oil, as it does not become rancid either in the body or out of it. It is better taken by the mouth than used as an injection, as it reaches and soothes the mucous membrane of the whole alimentary tract. It is absolutely non-irritant, is lighter than water, does not distend the bowel, and in his experience it diminishes flatulence. It is readily taken and well borne by invalids.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Treatment of Acute Diarrhea of Infancy.—

J. L. Morse, in the *Boston Medical and Surgical Journal* of August 3, 1899, says that the acute diarrhea of infancy may be divided into two classes—those of nervous origin and those due to the action of microorganisms. Those of nervous origin are the result of increased peristalsis caused by the conditions acting through the nervous system. Among the most important of these are changes in temperature, fright, and fatigue. These cause a failure of digestion, and the presence of partly digested food in the stools. This form of diarrhea is devoid of danger and is of importance from the fact that the intestinal lesion may furnish a fruitful soil for the development of microorganisms.

Infective diarrheas are roughly divided into fermental diarrhea, cholera infantum, and ileocolitis. Almost all of the summer diarrheas belong to the fermental class, ileocolitis being uncommon and cholera infantum exceptional. In the treatment of fermental diarrhea the aim should be to remove the microorganisms. Castor oil is

the most satisfactory where there is no vomiting, although calomel is applicable in all cases and is the best where there is vomiting. In all cases where vomiting is an important symptom the stomach should be washed out, and in those of severe type the lower bowel should also be irrigated. The writer regards the odor of the stools which is said to be characteristic of acid fermentation and albuminoid decomposition as quite an unreliable sign. As a general principle of the diet in these cases, he recommends that it be restricted to the least possible amount, and to those foods which are predigested and absorbed high in the alimentary tract. He thinks the universal rule of excluding milk and giving starches is objectionable, and that the success that has been reached with starches is due to the fact that they have been so diluted as to be a very attenuated form of food. After the preliminary period of complete or partial starvation the child should be given a mixture prepared from fresh milk Pasteurized and low in all percentages.

In the treatment of cholera infantum, which the author regards as a rare condition, and in which the pathological lesions are slight, never progressing further than hyperemia and desquamation, the main indications are to empty the stomach and bowels, to supply fluid to the tissues which are being drained, to promote the surface circulation, reduce the temperature, and keep the patient alive until the disease has run its course. Irrigations of cold water tend to restore the surface circulation and reduce the temperature, for which purpose also rubbing, mustard baths, and warm packs may be employed. Stimulants are to be employed freely, and they may be given subcutaneously. Atropine is the most useful drug for this purpose, given in $\frac{1}{500}$ to $\frac{1}{800}$ of a grain.

Signals of the Preeclamptic State.—

Charles Jewett, in the *Brooklyn Medical Journal* for August, 1899, says that the chief renal symptoms associated with the preeclamptic state relate to albuminuria, diminished urea excretion, and scant quantity of urine.

Albuminuria.—The precise value of the presence of albumin in the urine has not been definitely determined. It is agreed that albuminuria exists before the first convulsion in from 84 to 91 per cent of cases. This particular signal of approaching danger is an especially valuable one, because of the facility with which it may be detected. As a diagnostic measure this would not be so bad but for the fact that the examinations, as a rule, are made at long intervals. If made twice each week, in the majority of cases sufficiently

early warning would be given for the institution of remedial measures. In the writer's experience albumin is found in the urine even more frequently in these cases than is indicated by the above figures. In his private practice true eclampsia has never been associated with the persistent absence of albuminuria.

Urea.—Urea is a valuable clinical index of the excretory activity of the kidneys, and one may usually feel secure so long as the urea excretion is near the normal. Notable diminution of this constituent should always excite suspicion, and a marked falling off is usually of grave import.

Quantity of Urine.—This is especially useful as a clinical guide, since it is a matter that can be trusted largely to the patient's own observation. If the quantity remains above three pints in the twenty-four hours, eclampsia is a very great rarity. There may be a chronic nephrosis in which the quantity of urine is large, but eclampsia in such cases is infrequent, unless an acute lesion supervenes upon the chronic. The importance of quantity as a signal relates especially to the patient in whom there has been no preexisting nephritis. Even in the presence of albuminuria and diminished urea excretion, eclampsia will not occur so long as the volume of urine can be maintained—about seventy ounces in twenty-four hours. The quantity of toxic material which passes off in the urine is not measured by the percentage of urea elimination. An excessive flow of urine can usually be trusted to rid the tissues of the eclamptic poisons, even though the urea be diminished.

Thyroid Therapy in Gynecology.—

W. A. N. Dorland, in the *Therapeutic Gazette* of July 15, 1899, comes to the following conclusions as to the value of this substance in gynecologic conditions:

Thyroid therapy is especially indicated in hemorrhagic affections of the uterus and in all forms of pelvic congestion, notably in uterine fibromata, hemorrhagic endometritis, menopausal hemorrhages, and chronic tubal disease. The best results are to be expected in fibromata and pathologic conditions of recent development. The more chronic the case, the more rebellious will it prove to thyroidization. The thyroid influence is also found to cause an increase in the metabolism of the mammary gland, and the treatment is indicated in all cases of insufficient lactation.

The drug may be administered in the form of the fresh gland substance; as a desiccated powder of the fresh gland; in tabloids of the desiccated gland; as the fresh juice; or in one of the various

extracts of the gland, administered preferably in the form of tabloids. The same results may be obtained by direct transplantation of the thyroid from the sheep to the human subject. Because of the difficulty experienced in procuring the fresh gland and the repugnance which patients exhibit in consuming it, it is well to administer it in the dry form prepared by druggists—in tablets, pastilles, or capsules—in doses of two and a half to five grains three or four times daily.

Owing to the tendency to thyroid intoxication, it is well to discontinue the drug for a period of a week to ten days at regular intervals during the course of the treatment.

Inflammatory Disease of the Ovary and Tube, Due to Appendicitis.—

A. J. Ochsner, in the *Journal of the American Medical Association* of July 22, 1899, gives a table of 103 appendectomies performed at the Augustana Hospital. These are divided into three groups: The first includes children of fifteen years of age and younger, of which there are five boys and six girls; adults with uncomplicated appendicitis, thirty-four men and thirty women; appendicitis with secondary infection of the adnexa, fifteen cases; patients suffering from primary infection of the adnexa and secondary appendicitis, thirteen cases. There were ninety patients suffering primarily from appendicitis, and thirty in which the primary disease was in the adnexæ or else both the appendix and tubes were so extensively implicated that it was impossible to determine the primary seat of the inflammation. The writer thinks that in appendicitis secondary infection of the right ovary and tube has been very much underestimated. Inflammation of these structures upon the same side, and sometimes upon the opposite, is frequently noted. This condition is especially likely to give rise to chronic invalidism because of the periodic exacerbation resulting from the congestion due to menstruation. In operating for pyosalpinx the condition of the appendix should always be determined, and in operating for appendicitis in cases of recurrent dysmenorrhea the right ovary and tube should be examined.

Cerebral Abscess in a Child Complicated by Erysipelas of the Head and Face.—

W. J. Doyle, in the *New York Medical Journal* of July 29, 1899, reports a case of cerebral abscess in a child three months old, complicated by erysipelas of the head and face. When first seen the child was in pain, the pupils were contracted, and the skin hot and

dry. The temperature was 104.5°. At the anterior fontanel there was a pronounced swelling extending half an inch beyond its borders and elevated somewhat above the surrounding tissues. This elevation fluctuated slightly but distinctly upon pressure. The child had been well prior to the present illness. An incision an inch in length was made in the scalp extending anteroposteriorly about a quarter of an inch to the right of the median line. The dura was tough and resisting, and in the incision the longitudinal sinus was opened. The opening was then packed with gauze to check hemorrhage, and the operation was postponed. The dressing was removed forty-eight hours later and the wound lightly packed with gauze. On the following day the packing was found to be saturated with green pus. In all about three fluidrachms was discharged, and the case went on to uneventful recovery.

Antistreptococcic Serum in Puerperal Fever.—

A. G. Deerdorff, in the *Annals of Gynecology and Pediatrics* for July, 1899, contributes a most enthusiastic article on the use of antistreptococcic serum in a case of puerperal infection. The writer states that it was the most severe case that had ever come under his observation. Three days after an abortion the patient was seized with faintness and with obscure vision. In about an hour depression was very marked. The heart's action was weak. A curettage was done, which removed some decomposing fragments of placenta. Following the curettage, the temperature rose to 103° and the pulse-rate to 130. The following morning seven cubic centimeters of antistreptococcic serum (P., D. & Co.) was given, and at the end of six hours the temperature had fallen to 101°, when a second dose of six cubic centimeters was given. The heart acted badly for three days, but large doses of digitalis and strychnine improved matters. The serum was administered morning and evening in doses of three to four cubic centimeters for eight days. At the end of ten days the temperature remained normal, the pelvic conditions cleared up, and the patient made a good recovery.

Vaginal Incision and Drainage for Simple Broad Ligament Cysts.—

T. J. Watkins, in the *American Gynecological and Obstetrical Journal* for July, 1899, says that this operation is recommended in the treatment of simple non-pedunculated broad ligament cysts only. It is not a revival of the old operation of tapping, which was usually done through the abdomen, and did not empty the sac nor provide for drainage. In the operation by the vaginal route the most dependent part of the cyst is freely opened, completely emptied,

and perfect drainage established. He believes that the cyst cavity may in this way be entirely obliterated. The results are superior to those obtained by transperitoneal enucleation, and the dangers are much less. The principal objections to the operation of vaginal incision and drainage are refilling of the cyst, malignant disease, and difficulty of diagnosis. The time which has elapsed since the adoption of this operation is not sufficient to enable us to draw conclusions regarding some of its theoretical objections. He believes that the dangers of the transperitoneal method outweigh those which are theoretically advanced against this operation.

An Epidemic of Jaundice in Children.—

M. Fringuet reports in *La Presse Médicale* of July 5, 1899, an epidemic occurring in the pupils attending the same school and occupying the same room. The cases were seven in number, and the ages of the children varied from seven to thirteen years. Four were boys. Five resided in one village and two in another. The reporter is at a loss to account for the epidemic, which was by no means severe; in all the cases the jaundice was marked, and the symptoms were much the same, being a general weakness, loss of appetite, impairment of digestion, with occasional nausea and vomiting and nosebleed. In all cases the liver was enlarged, and in some there was tenderness on pressure. In all the cases the pulse was remarkably slow, and this lasted after the liver had returned to its normal size. In one patient the pulse was 55 and in another 58, while at the time there was no reaction for bile in the urine. After convalescence set in the icterus disappeared very rapidly.

Gruels in the Feeding of Infants.—

H. D. Chapin, in the *Medical Record* of August 5, 1899, says that the best method of acting on the casein of cow's milk, in the way of attenuating and modifying the curds, is by properly diluting the milk by a decoction of the cereals. While this has long been believed, it has been denied by some authorities. The writer instituted a series of experiments for the purpose of further studying the question. His experiments show that fresh barley-water prevented the formation of cheese curds when milk is coagulated by rennet in a beaker. Besides attenuating the casein, the addition of gruels to cow's milk increases the nutritive value of the food. The theoretical and experimental considerations have received abundant confirmation in the writer's extended clinical experience, which has included all kinds of infant feeding, and especially that hardest class of cases, bottle-fed babies in hospital and dispensary practice.

FORENSIC MEDICINE.

Accouchement Force After the Mother's Death.—

The *New York Medical Journal* of August 5, 1899, discusses this subject editorially. That the danger of Cæsarian section has been greatly lessened no one will deny, consequently there is a lack of hesitation in performing this operation upon the dead that may prove disastrous under some circumstances.

It is just possible that the advances that have been made in recent years in the techniques of Cæsarian section, whereby it has almost been robbed of its fatality, have led to such a degree of readiness to resort to it in the case of a living woman, and the consequent utter lack of hesitation to perform it on the dead, as may prove disastrous under certain circumstances, unless special precautions are taken. The danger was lately set forth somewhat graphically by Dr. Colle, at a meeting of the Société Centrale de Médecine du Nord (*Echo Médical du Nord*, June 25). Within a week of her expected confinement a woman fell dead, with symptoms of pulmonary embolism. He went home hastily to obtain the necessary instruments. It was fifteen or sixteen minutes before he returned, and then he rapidly incised the abdominal wall and that of the uterus, tore open the fetal envelopes, and was fortunate enough to extract a child, which, though cyanotic, soon began to breathe and was saved.

An ugly rumor began its rounds. It was whispered that the doctor had killed the mother. This set M. Colle to thinking, and his reflections were not pleasant. He asked himself what material proof he should be able to offer that the woman had actually been dead at the time of the operation, in case he was accused; and prosecutions of doctors were so easily set on foot! At the meeting he mentioned these reflections and cited instances of women supposed to be dead who had regained consciousness during the Cæsarian operation. He was inclined, therefore, to prefer *accouchement force* in cases of the supposed death of the mother, for it could be performed at once, and the woman, if not really dead, be saved as well as the child, while the accoucheur's reputation was safe also.

M. Oui agreed with M. Colle that, after the mother's death, *accouchement force* was to be preferred to the Cæsarian section, at least in private practice, for in the cutting operation the same precautions should be observed as if the mother were living, and that might really be the case. He cited Tarnier as having called atten-

tion to the very important consideration that it was always necessary to lose more or less time in obtaining the consent of the family to the performance of hysterotomy, whereas one could proceed at once to extraction *per vias naturales* and incur no reproach. M. Oui would use the forceps if he happened to have the instrument with him; otherwise there was but one resource—podalic version.

The Dangers of Acetylene.—

The increased use of acetylene as an illuminant, with the possible dangers which accompany the use of this gas, will undoubtedly bring it into prominence sooner or later, as a subject of medicolegal inquiry. E. Renouf, in the *Pharmaceutical Era* of July 20, 1899, in writing on the uses of acetylene, says the statement is still current that it attacks copper and brass, forming an explosive compound. This is not true. Exhaustive experiments by Moissan and by Gerdes, keeping these and other metals in contact with acetylene for months at a time, have shown that the metals were not affected. The conditions under which the explosive copper acetylide is made in laboratories cannot well occur in generators or gas-holders. It has been said that acetylene is very poisonous; the experiments of many observers, and especially those of Grehant, do not confirm this statement. Grehant experimented on dogs, causing them to breathe mixtures of acetylene, air, and oxygen, which always contained 20.8 per cent of oxygen, this being the percentage of oxygen in pure air. By this device he was able to discriminate between the poisoning caused by acetylene and suffocation caused by insufficient oxygen. A mixture containing 20 per cent acetylene inhaled for thirty-five minutes did not seem to trouble the animal. A sample of the dog's arterial blood contained 10 per cent of acetylene. A dog which inhaled a mixture containing 40 per cent of acetylene died suddenly after fifty-one minutes, having inhaled 112 liters of the mixture; the arterial blood contained 20 per cent of the acetylene. Grehant proved that acetylene simply dissolves in the blood plasma, while carbon monoxide forms a compound with the hemoglobin of the blood. A dog breathing a similar mixture of air, oxygen, and illuminating gas containing only one per cent of carbon monoxide quickly showed convulsive movements and died after ten minutes; its blood contained 24 per cent carbon monoxide. Thus acetylene, while slightly poisonous, is less poisonous than coal gas, and vastly less than water gas, which contains a high percentage of carbon monoxide.

The writer speaks of the several explosions which have occurred

in acetylene works. The most of these he attributes to gross carelessness. In two fires which have occurred, one in Paris and one in Berlin, in which acetylene works were destroyed, numerous cylinders were dug out of the ruins which had not been exploded.

Judicial Errors in Lunacy.—

George Villeneuve and E. P. Chagnon, in the *Montreal Medical Journal* for August, 1899, divide the judicial errors in lunacy into two classes: First, those accused persons who have been submitted to a medical examination and found insane, but in whose cases the court has paid no heed to the opinion of the experts, and has passed sentence on the prisoners. These errors are called "intentional." The second class comprises all those insane persons whose mental derangement has not been recognized at the trial and who have been sentenced, the fact of their insanity being passed unnoticed. No medical opinion was sought for, and no plea of insanity set up as a defense. These errors are spoken of by the writers as "unintentional." It is to this second class that the authors exclusively refer in their paper. That these cases are very numerous is shown by the statistics of Paul Garnier, who presented to the Anthropological Society at Brussels a statistical table of persons who were supposed to be insane in the Department of the Insane in France. In five years 255 errors of this kind were recorded. Similar statistics are found in Germany; at the Waldheim prison, of 6276 prisoners condemned, 2.7 per cent were found to be lunatics.

In the study of statistics of the Province of Quebec the writers find that from 1881 to 1897 inclusively there were 1197 lunatics admitted to the common jails of the Province. Of this number only 498 were incarcerated for safe keeping while waiting for the proper papers to be made out for their removal to the hospitals. Deducting the 498 cases which were intentionally placed in the prisons, there remains a total of 699 lunatics condemned during a period of seventeen years—that is to say, an annual average of forty unrecognized and condemned lunatics. The proof that these prisoners were insane at the time of their trial and sentence is that upon their reception in prison they were immediately classed as lunatics, and were transferred to the hospitals for the insane. The writers think that the figures given do not represent the full proportion of condemned lunatics, as 155 prisoners were transferred to the asylums with the statement that they had become insane after their incarceration. Many of these, the writers think, were unrecognized lunatics at the time of trial, and that the mental condition long antedated the time of their reception.

The Physical Examination of the Plaintiff in Personal Injury Suits.—

The *Journal of the American Medical Association* of July 15, 1899, reports the case of Mary Elizabeth Lane *vs.* Spokane Falls & Northern Railroad Company. The Supreme Court of the State of Washington discusses whether the courts of that State have the power to compel one who sues to recover damages for injuries to his person to submit to an examination by medical experts appointed by the court, for the purpose of ascertaining the nature, character, and extent of his injuries. Actions of this character have become so numerous that the question is of far greater importance than was possible twenty-five years ago, and it is not surprising that most of the cases in which the question has arisen or is discussed at all are of recent origin. In Iowa, Nebraska, Kansas, Wisconsin, Alabama, Arkansas, Ohio, Michigan, Georgia, Minnesota, and Missouri, it has been held that the court possesses the inherent power to make such an order; while in Illinois, New York, Indiana, and the United States Supreme Court, the power is denied. For itself the court indorses and adopts the view expressed in a dissenting opinion in the Supreme Court of the United States "that a party who voluntarily comes into court alleging personal injuries, and demanding damages therefor, should permit disinterested witnesses to see the nature and extent of those injuries, in order that the jury may be informed thereof by other than the plaintiff and his friends, and that compliance with such an order may be enforced by staying the trial or dismissing the case." It is to be presumed, further, says the Supreme Court of Washington, that in exercising this power the trial court will always see that only proper physicians or surgeons, and where possible wholly disinterested ones, are appointed to conduct the examination, and that the expense of such examination should be borne by the party requesting it. Care, it adds, should be exercised to avoid all unnecessary inconvenience and annoyance to the plaintiff, and, when desired, it should be made in the presence of the counsel and friends of the party to be examined, and the trial court should be free to exercise that sound discretion which the nature of the case and the ends of justice may require.

Transient Mania and Homicide Following Carbon Dioxide Poisoning.—

In the *Journal of the American Medical Association* of August 5, 1899, is an account of a murder due to carbon dioxide poisoning. It is said that there is already one recorded case of transient mania due to inhalation of this substance. The case, which is reported from *Neue Freie Presse* of July 1, is that of a trusted and reliable railroad employee of 58 years, who was suffering from

influenza, and who had been advised to "take a sweat." When he went to bed he stuffed a rag into the stovepipe to keep the room warm, as the fire was nearly extinguished. Aroused several hours later by a passing train, he rushed out-of-doors and vaguely remembered going back into the house and calling his wife and sister to come out. When they failed to respond, he became furiously enraged, and seizing a razor attacked them in a frenzy. The sister in an adjoining room managed to escape, but the wife's throat was cut. The blood of the wife gave the characteristic reactions of carbon dioxide poisoning.

An Opium Habitue of Nine Months.—

W. F. Boggess, in the *Archives of Pediatrics* for May, 1899, reports a child nine months old, small, weighing but eight or nine pounds, but bright and well nourished. Six months before coming under observation the mother had begun administering laudanum for colic. The dose administered varied from four to twenty drops, and the daily quantity was from one to two drachms. While under the influence of the drug the infant was bright and apparently quite comfortable, but as soon as it was withdrawn there was pain and fretfulness. The drug was rapidly reduced in quantity, and was followed by a prompt recovery. The report is of interest from the fact that it is the earliest case of opium addiction on record, and the remarkable tolerance of the drug shown by so young a child.

A Hospital's Responsibility for a Nurse's Negligence.—

According to the *Dominion Medical Monthly* for June, 1899, a woman was sent to St. Vincent's Hospital to have an operation performed. She was given ether, and after regaining consciousness after the operation she complained of pain in one leg. It was found that a hot-water bottle was lying on the leg, and it was claimed that it had caused injuries which had resulted in permanent disability. The patient sued the hospital for $30,000 damages. At the trial the case was dismissed, the judge holding that the hospital could not be held responsible. The case was appealed, and now the Appellate Court has handed down a decision that the ruling of the trial judge was bad, and that a hospital cannot escape responsibility in that way. A new trial has been ordered.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

Books for review, exchanges, and all matters relating to the editorial management, should be addressed to Harold N. Moyer, M.D., 103 State St., Chicago, Ill.

All communications relating to the business management of MEDICINE should be addressed to William M. Warren, Publisher, Detroit, Mich.

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ORIGINAL ARTICLES.

DRUGS IN CARDIAC INSUFFICIENCY.[1]

BY O. T. OSBORNE, M.D., NEW HAVEN, CONN.

I do not intend a long *résumé* of facts that you all know, neither do I propose to take into consideration the pathology, etiology, or clinical history of heart lesions. For our purpose I will divide cardiac insufficiency into two classes:

1. Incompetence with valvular lesions.
2. Badly acting hearts without valvular lesions.

The first class necessarily divides itself into acute and chronic insufficiency. Let us for a moment picture the former, for rarely has a writer described that cardiac agony as we see it. We hasten to answer the hurry call, and wonder if this time we will arrive before death. We find the door open and the relatives in anxious waiting, while the patient's eyes give that longing appeal and say what many times the lips have not breath to utter. We find each patient always in the same position as we have been wont to find him under the same conditions. Each of these sufferers has learned the position that suits him best. If in bed the head is raised; if standing the back of a chair is grasped to fix the arms and aid the extra-respiratory muscles to combat the acute cardiac dyspnea. The patient is generally bathed in a cold perspiration, and the extremities are often icy cold; he calls for air and to stop fanning all in one breath; he wants his brow wiped off, but nearly goes frantic while it is being done. His noisy, groaning expiration, with the wild, staring eyes and the agonized expression, shows the suffering. There may be incontinence of urine and even feces, with frequent short coughs, or even hiccoughs,

[1] Read (by invitation) before the New York State Medical Association.

and often vomiting, with frequent twinges of cardiac pain. This picture seen often may raise the question, What right have I to save him and then compel him to suffer again and again like this? I use the word save wittingly, for we physicians do surely save these cases as surely as the surgeon saves with his knife, for this is rarely a case of *vis medicatrix naturæ*, and not a case of *post hoc* but *propter hoc*, if we reach our patient in time. Immediate treatment is necessary.

Our armamentarium consists of digitalin, morphine, strychnine, camphor, nitroglycerin, atropine, alcohol, and in a few cases venesection. It is useless to administer drugs by the stomach in the above described condition, as there is no absorption, even if the contents of the stomach are not ejected. The conditions to be met are the rapid, fluttering, and irregular heart, the nervous excitement, cardiac anxiety, and, most important of all, the pronounced vasomotor spasm. A heart with leaking or constricted valves has more blood entering its chambers than can be gotten rid of by one contraction. The peripheral resistance, due to the spasm of the blood-vessels, tends still more to interfere with emptying of the heart. Owing to the well known stimulus of distention to hollow muscular organs, the heart begins to contract faster and faster; soon, by some disarrangement of the inhibitory apparatus, the heart loses its governor, and the result is 150 or more beats a minute, the blood being sent through the arteries with irregular force, as evidenced by the varying volume of the pulse. At this time, with or without cardiac pain, which upsets the rhythm of the heart, the patient becomes frightened at the feeling of impending death, and the cerebral reflexes add to the cardiac difficulty. The breathing becomes nervously rapid, besides what is due to the rapid heart, the chill of fear is added to the already contracted peripheral vessels, and we get spasmodic contraction of them. The strongly contracted arterioles dam the blood in the large arteries, while the venous circulation becomes more and more sluggish, the lips, finger-nails, and forehead are bluish, and a diminished amount of blood goes back through the large veins. Respiration becomes more rapid and deep, the inspiration being as strong as possible, every axillary muscle taking part, thus making the negative pressure in the chest aid, as far as possible, in bringing the blood through the veins, the arterial spasm being so great as to impair the ordinary arterial propulsion of the blood. Undoubtedly part of the extra-respiratory stimulus comes from the lessened arterial supply to the respiratory center.

Two factors may normally, without treatment, check these cases,

and the bad "heart turn" may be cured spontaneously. One is where the patient does not lose his head, so to speak, and has a will power so strong that he will not get nervous or frightened. This prevents the mental irritation of the heart and also the final peripheral spasm of the blood-vessels, and in a shorter or longer time the heart quiets down. We utilize this by assuring the patient that the attack will soon pass and that there is no danger.

The other cause of spontaneous cure is where the exhaustion from the respiratory muscular effort, plus the drowsy condition caused by the cerebral hyperemia, with perhaps imperfectly aerated blood, gives finally a dulling of the mental power and a removal of the nervous excitement, which with the exhaustion gives a relaxation of spasm, and the resistance to the flow of the blood is removed, the surface of the body becomes warm, the heart quiets down, and the paroxysm is passed. The part that the nervous system plays in these cardiac paroxysms is shown by the good results of morphine injections even where there is no pain. Hence the use of morphine seems to be directly in line with the natural resolution of the symptoms, viz., quieting the nervous system, causing drowsiness and relaxing spasm, and thus causing increased peripheral circulation. In many cases this is the only treatment necessary.

There are other problems to solve. A full dose of morphine may impair the action of the respiratory center, which is already in trouble, and death can be easily caused by the overaction of morphine at this time. The addition of atropine to the injection will, of course, prevent the depression of the morphine on the respiratory center, and may quiet some of the cardiac pain, but will not steady the heart, although it may stimulate it, and will increase rather than decrease vasomotor tension, though peripheral irritation may be diminished. Hence a fair dose of morphine hypodermically, with a small amount of atropine, if respiratory depression is feared, is the correct physiological method.

The more we study the heart and blood-vessels, the more we see how necessary it is for the heart to have a proper tone to its arterial system, in order to act well; consequently we can hasten the action of morphine, or rather cause in an entirely different manner the dilatation of the constricted arterioles, by nitroglycerin. If this drug is used hypodermically the dose should be small, not more than $\frac{1}{200}$ of a grain. It is, perhaps, better to give the tablet dry on the tongue, say one every fifteen minutes till the frontal throbbing is complained of, and then to stop, as too much will overdo the dilatation of the blood-vessels and overstimulate the heart. I believe

that nitroglycerin pushed to the physiological limit, combined with a hot foot-bath, will generally obviate the necessity of venesection. I prefer nitroglycerin to nitrite of amyl because the results are better under control.

Suppose we do not have the natural resolution of a cardiac paroxysm, but cardiac dilatation, edema, passive congestion of the lungs, or other symptoms of cardiac insufficiency show themselves. Here we must help the heart directly. In these cases digitalis is the best cardiac tonic. The dose of digitalis depends upon the valvular lesion; in aortic lesions it should never be pushed to a slowing of the heart below eighty beats to the minute, and should generally be given coincidently with nitroglycerin, so that the peripheral resistance is not increased. In mitral disease, and especially in mitral stenosis, we get splendid results from slowing the heart down to sixty and even fifty beats per minute, so that a patient who has not lain flat in bed for weeks may be found with but one pillow when next seen. The prolonged diastole gives best results in mitral stenosis; it improves the nutrition of a used-up heart. Digitalin is the best form for hypodermic injection, and the dose should be sufficient for at least three hours—$\frac{1}{100}$ to $\frac{1}{50}$ of a grain. We must not forget that a patient whose heart has been greatly slowed by digitalis must not rise from the recumbent position even to urinate until the profound effects have passed off, and that a full dose of digitalin will last twelve hours.

The above treatment generally suffices to stop the paroxysm, but if we have cardiac exhaustion, as above shown by paleness of the face, pinched nose, intermittent reduplicating heart, with frequent beats not transmitted to the wrist, we must then have recourse, besides the treatment already suggested, to strychnine, camphor, and small amounts of alcohol.

Strychnine is our best general stimulant, as well as a stimulant to the arterioles and heart, and should be given with a free hand, selecting the dose in our judgment required (be it one-thirtieth or one-fifteenth) hypodermically, but not to be repeated in at least two hours. The flagging nervous centers are all stimulated to do their best work, to tide over the exhausted period until strength and rest are brought to them by a relieved heart.

One of the best cardiac and brain stimulants is camphor. Given in a saturated solution in olive oil hypodermically it will generally steady a tired and intermittent heart. The injection of a syringeful can be repeated every fifteen minutes for three or four times if needed.

I have purposely left alcohol for the last, for except in small amount I am afraid of it in bad cardiac weakness. The secondary effect of alcohol is always that of a vascular paralyzant, and hence an aggravator of cardiac depression. I deprecate the wholesale use of brandy or whiskey by the hypodermic syringe in ether or chloroform collapse. Whiskey or brandy by the mouth, but little diluted, stimulates the heart reflexly by its burning impact, but with the hypodermic syringe it should be used only in small quantity—a syringeful every half-hour or hour for a few doses, if the results are good.

It is not the province of this paper to enter in great detail upon the treatment of chronic insufficiency, but allow me to say that in lack of cardiac compensation rest is a *sine qua non*, and as a cardiac tonic nothing equals or approaches digitalis. With proper care, occasionally noting the amount of urine passed in twenty-four hours, it can be given for months or years without trouble. Every patient under a cardiac tonic should be seen at least once a month if not doing very well, and once in two months even if doing perfectly. The physician can then note the rate and tension of the pulse, the tone of the first sound of the heart, the snap of the basic closure. The condition of the bowels, the sleep, the tendency to headache, the tendency to coldness and numbness of extremities, and to nausea or vomiting, should be observed. By these symptoms we appreciate an excess of digitalis and reduce the dose; if we feel that the heart muscles cannot do without a tonic we can then add, or substitute, cactus. The latter is a good heart tonic if given in from ten to twenty-five drops of the fluid extract where there is little or no lack of compensation. Cactus does not constrict the blood-vessels and prolong the diastole as does digitalis, but strengthens and steadies the heart. Cactus rarely causes nausea, nor is the urine decreased. In lack of compensation, where digitalis has restored the compensation, cactus may suffice for a short time. Cactus in combination with digitalis enables us to use less of the latter. Patients can go longer without symptoms of saturation by digitalis, and with a longer period of good compensation, than with any other combination that I have used.

I am accustomed to tell my classes that strophanthus "acts just like digitalis, only less so," which epigrammatic description I believe to be strictly true, namely, less powerful as a cardiac contractor, less of a cardiac slower, less of a vasomotor constrictor, less of a nauseant, less apt to diminish the amount of urine.

Sparteine and caffeine I often use for a short time, but more as

a change than to meet a serious indication. Cut down, or, if necessary, absolutely prohibit, the use of alcohol, coffee, and tea, in heart cases; I am not sure that we thoroughly appreciate the intense stimulation to these hearts by coffee. We may use coffee with a definite object and safely by watching the results. These cases should not be allowed to use it as a beverage. Of minor conditions the bowels in cardiac cases are the most important, not only from the increased passive condition which constipation gives, but from the increased tendency to bowel infection with its head and stomach consequences. Hence the bowels must be carefully moved every day, with that drug or combination of drugs which will accomplish the best result in a given case with the least disturbance. An occasional small dose of calomel is, I believe, good treatment, relieving portal congestion and acting as a bowel antiseptic.

For the sake of illustration allow me to quote a case which shows the results of careful watching: A woman aged 38, with a direct and indirect aortic murmur, and an indirect mitral, with fairly good compensation. She is very easily affected by drugs, and the doses must be small.

September 23, 1897, patient had a faint turn, and her heart had not been doing well lately. The heart was weak, with a weak but regular pulse. Tincture of digitalis, ten drops twice a day, was ordered, with rest. Four days later, as the heart was still weak, the digitalis was increased to twelve drops twice a day. At the end of the week the pulse was 62 and firm. Then there was numbness and coldness in the right arm and leg, which was treated with spirits ammon. aromat., and the digitalis reduced to ten drops, combined with ten drops of fluid extract of cactus. The urine was normal. In a week the numbness had disappeared, and the heart was doing better. The ammonia was stopped and the digitalis reduced to eight drops morning and evening, and the cactus continued in ten-drop doses at noon. The next week, three weeks from the beginning of the record, patient had some head pressure and cardiac asthma, which was relieved by $\frac{1}{200}$ grain of nitroglycerin on the tongue. The digitalis was reduced to six drops, and the cactus continued, with $\frac{1}{60}$ grain sulphate strychnia three times a day.

On October 13, just one month from the beginning of the record, the whole condition improved; stopped strychnine and continued digitalis and cactus, six drops of the former morning and night, and ten drops of the latter at noon. February 28, five months from the beginning of this record and four months since last seen, the patient had been doing finely on above dosage, but now she is not as well.

Pulse slow but not strong, head all right, no coldness or numbness. She was given eight drops of fluid extract digitalis morning and evening, and cactus unchanged; strychnine $\frac{1}{60}$, and a teaspoonful of whiskey three times a day. One week later she felt a little cold, otherwise better. Reduced digitalis to six drops morning and night, and cactus, strychnine, and whiskey continued. March 15, ten days later, doing very nicely. Stopped strychnine and whiskey and continued heart drugs in same dosage which sufficed from October 13 to February 28, and which was less than had been given in 1896. Since March 15 the doses have been the same and the results satisfactory.

This case could be multiplied over and over again, but the description of other cases could only emphasize the fact so well brought out by this one, that good care and careful judgment are needed in these cases of chronic heart disease, and such being given we have good results.

Insufficient hearts without valvular lesions include that ever-increasing class labeled "heart failure." We have the real heart failure of ether or chloroform narcosis, and that due to shock. Here we have a weak, faintly acting heart, with dilated peripheral blood-vessels, and great loss of heat. If there has been hemorrhage, of course nothing can take the place of saline transfusion, and I heartily commend the giving of a normal saline solution, by high injection per rectum, as routine practice, after every severe or prolonged operation, whether much blood has been lost or not. It tends to fill up the blood-vessels and reduce the thirst that perhaps for some time cannot be well relieved by the stomach on account of nausea, and also prevents the tendency to kidney congestion by establishing early a free flow of urine.

Our first treatment of this cardiac failure is heat to the extremities and heart, and perhaps to the body, and elevation of the feet and legs to aid in the return of the blood in the veins, which has lost the force from behind, viz., the elasticity of the arteries by the latter's dilatation. We can also aid the flow of venous blood to the chest by artificial respiration, first by increasing the negative pressure in the chest, and then the forcible expiration, giving more force to the aortic impulse. As to drugs, good treatment is an occasional careful whiff of ammonia salts to the nostrils and a hypodermic of strychnine in good dose, atropine in a dose not to be repeated, several injections of camphor as above described, and brandy once or twice, but not repeated in at least an hour. Digitalin may be used with care if the heart rallies but shows signs of recurring weakness. Electricity can be used if needed.

What shall we say for "heart failure?" Is it a malarial or la grippe nomenclature for an undiagnosed condition, or are we having more and more frequent cases of suddenly, or perhaps chronically, weak heart, for which there is no, or at least the most careful of us can find no, assignable cause? I think the latter proposition is true, but as I stated in the beginning we are not dealing with causes here; suffice it to say that we are frequently called to treat a weak heart. True heart failure can occur alone or during the progress of various diseases, but its treatment will be generally the same from whatever causes, and that suggested for heart failure in ether narcosis is perhaps equally applicable to ordinary heart failure, with this difference, viz., that we have the brain with us and will get all of the voluntary help that we can from increased respiration. Here we get the best results from brandy or champagne by the mouth, and from black coffee if there is no vomiting. Hypodermics of strychnine and atropine and camphor are the reliables, with digitalin if the pulse is fast; if the pulse is slow I believe it to be contraindicated.

A chronically weak heart without valvular lesion is best treated by strychnine and small doses of digitalis or cactus. As a stimulant, camphor or ammonia regularly for a week or two is better than whiskey or coffee. A complete, rigid regulation of the life and habits of the patients is essential, and a removal, if possible, from the nervous causes which play so important a part in cardiac weakness and irritability, and are often the forerunners of neurasthenia.

In nervous and irritable hearts, typically seen in chronic tobacco poisoning, nothing can surpass strychnine in full doses and digitalis in small doses, or full doses of cactus. Weak, irregular hearts occurring from any other cause or condition should be treated on the same general basis as laid down above, modified by the condition present.

PENETRATING WOUNDS OF THE CHEST.

BY J. B. MURFREE, M.D., MURFREESBORO, TENN.

Penetrating wounds of the chest are an important class of injuries, which we are frequently called upon to treat, and which oftentimes cause perplexity and apprehension. They are important not only from their frequency, but especially on account of the serious nature of the wounds, and the extent and character of the tissues and organs involved, as well as the great damage done to the individual. Alarming in their character, they cripple and often render the recipient a sufferer for life. Not infrequently they are rapidly fatal. The organs within the chest are essential to life—emphatically vital organs—and any decided and extensive encroachment upon their integrity ends in death. While this is true, they are possessed of great and seemingly wonderful resisting and recuperative powers, sustaining great destruction of tissue and yet maintaining their vitality as a whole.

Wounds of the chest may be confined to its walls, or they may extend into the cavity, injuring the tissues and organs enclosed in the pleural sac. Hence, wounds of the chest have, very naturally, been divided into penetrating and non-penetrating. The latter are the same as wounds of the soft parts in other localities, and will not be considered.

A penetrating wound of the chest is a wound produced usually by external violence, where the walls of the chest are penetrated and the offending substance enters the thoracic cavity. It is a wound where not only the chest walls are injured, but also the tissues, and oftentimes some of the viscera within the cavity. The penetrating substance may simply pass through the wall of the chest and parietal pleura into the cavity, and not wound any of the contained viscera or their enveloping membranes. Penetrating wounds of the chest vary in their extent, character, and severity—from a small perforation made by a delicate knife-blade or small bullet, merely separating the tissues without inflicting any serious injury, to a laceration with great loss of tissue and serious damage to an organ, produced by a large knife or rifle ball.

Any substance capable of dividing the tissues so as to gain an entrance into the pleural cavity may cause a penetrating wound of the chest. Usually they are produced by cutting instruments which are pointed, or bullets constituting the gunshot wound. Penetrating wounds of the chest constitute a dangerous class of wounds,

necessarily so from the parts involved. The danger is in proportion to the vitality of the parts injured, the extent of the wound, and the character of the substance inflicting the wound.

Wounds of the heart and large blood-vessels are much more dangerous than wounds of the lungs, while wounds of the lungs are much more dangerous than wounds of the pleura and smaller blood-vessels. Any wound of the chest that penetrates into the thoracic cavity constitutes a serious wound, a wound that disables the patient and may cause death.

Wounds penetrating the chest are dangerous from hemorrhage, from the admission of air into the pleural cavity producing a collapse of the lungs, emphysema, empyema, septicemia, or exhaustion. When a large vessel is injured death quickly ensues from the loss of blood, while injury to a smaller vessel may endanger life and even prove fatal from continued or frequently repeated bleeding. The sudden admission of atmospheric air into the thoracic cavity may produce a collapse of the lungs, and the patient die of suffocation. Empyema may result from the effused blood in the cavity not being absorbed nor organized, but, contaminated by the streptococcus pyogenes, becoming liquefied and purulent, producing systemic infection by its absorption into the circulation; or else it will form a sinus, and escape externally.

Emphysema may result from a wound of the lung; the inspired air through the rent in the soft part gains admission into the cellular tissue not only of the chest, but also, it may be, of the greater part of the body. Finally, penetrating wounds of the chest may give rise to a septicemia from the absorption of septic matter introduced from without or generated inside, which may prove fatal. A wound which penetrates the chest wall opens up an avenue for the entrance of air which may be loaded with bacteria.

Generally in penetrating wounds of the chest there is free hemorrhage, and some blood escapes through the external wound. More or less of it is retained in the pleural cavity, which usually is absorbed, and no harm results; occasionally it fails to be taken up by the absorbents, and from contact with the air undergoes decomposition and becomes infectious. From the injury done to the lung an inflammatory action takes place, producing a pneumonitis. When there is a large external wound the lung may partially protrude, giving rise to a hernia of the lung. Sometimes, in addition to the wound of the lung, there may be a fractured rib, a not infrequent accident in gunshot wounds of the chest.

The symptoms of penetrating wounds of the chest come on

quickly after the injury, and vary greatly in their intensity and duration. Nor are they always in proportion to the damage. Generally the shock is decided; the pulse is rapid, small, and weak; the heart's action is feeble; while the surface of the body is pale, cold, and bathed in perspiration. The respirations are often shallow, jerking, and irregular, and the air is heard passing in and out the wound with each respiratory act, while blood is forced out with each expiration and cough. Wounds of the chest are readily recognized; an especial feature in the diagnosis is to discriminate between wounds which are external to and those that are within the cavity. Usually the symptoms which indicate that a wound has penetrated the chest wall are distinctive. They are recognized by the locality of the injury, the external wound being situated somewhere on the chest, usually at an intercostal space. There is an escape of blood mingled with the air; the hemorrhage is severe, oftentimes profuse, and there is a ready passage of air to and fro with each respiratory act. When a lung is injured, in addition to the escape of air at the external wound there is bloody expectoration. Hemorrhage from the lungs and the escape of air through the wound externally are the diagnostic symptoms of injury of the lung. The bleeding may take place into the bronchial tubes and be expectorated as pure blood, or mingled with air, forming a red, frothy sputum, which in time becomes rusty or dark-colored. Again, the bleeding may take place into the pleura, forming a hemothorax, which is gradually taken up by the surrounding tissues. The air escapes through the external wound with each respiratory movement, or it may be retained in the pleura, distending the thorax and compressing the lungs; or it may enter the cellular tissue, constituting an emphysema. When there is a large external opening, the air rushes in and out with each respiratory act. Severe shock attends a wound of the lung. Usually there is great depression, with much anxiety and distress. There is a dryness and irritation of the throat which produce a constant desire to cough, only restrained by the severe pain occasioned by any movement. When a penetrating wound of the chest injures the heart or a large blood-vessel, there is decided shock with great distress, difficult breathing, depressed circulation, pain, and a gradual failure of the heart's action.

The diagnosis of a penetrating wound of the chest is made by considering the seat of the injury, the instrument which inflicted the wound, and the general condition of the patient. The escape of air with the blood indicates that at least the pleura has been wounded; the expectoration of blood that the lung has been injured;

while a severe shock with profuse hemorrhage and collapse indicates that the heart or one of the large blood-vessels has been wounded. Penetrating wounds of the chest necessarily injure the soft tissues, both external and internal, and the great vascularity of these tissues causes more or less hemorrhage; usually these wounds bleed quite freely, sometimes profusely. From the anatomical formation of the chest it is almost impossible after a wound for all of the blood to escape from the pleural cavity, consequently there is some blood retained, either to be absorbed or undergo decomposition.

This retained blood is usually readily absorbed, leaving no bad consequences. Sometimes it is organized into lymph-bands, which bind the walls of the pleura together and interfere with respiration. Occasionally it liquefies and is converted into pus, which produces disastrous results. In either event time is required. As a rule penetrating wounds of the chest are slow in healing and convalescence is protracted. While penetrating wounds of the chest are always serious, yet the prognosis is favorable. Sometimes such great injury is done to the heart or great blood-vessels that death is inevitable, yet they nearly all can be treated so as to preserve life.

The general rules of surgery should govern the treatment. In penetrating wounds of the chest we should strive to arrest hemorrhage and relieve shock. Remove all foreign substances from the wound, thoroughly cleanse it and adjacent tissues. Hermetically seal the wound of entrance and exit under rigid asepsis, and finally immobilize the chest walls. For the purpose of arresting hemorrhage the ligature (the best of all hemostatics) should be applied whenever it is practical to do so. The internal mammary and the intercostal arteries can be ligated. When the bleeding vessels cannot be reached, compression must be used.

As a rule of practice, we may rely upon nature to check the hemorrhage by coagulum where there is no external bleeding. Where there is external bleeding, we must not hesitate to enlarge the opening and ligate or compress the wounded vessel. Hemorrhage if primary may be checked by packing with aseptic gauze. In enlarging the wound we should if necessary resect one or more ribs, so as to gain free access to the bleeding point. The whole of the pleural cavity may be filled with gauze, if need be. In secondary hemorrhage we should not hesitate to cut down upon the wound, remove one or more ribs, find the bleeding vessel and ligate it. The patient must avoid all excitement; perfect quietude must be secured. Cold applications should be made to the wound, while the chest is tightly bandaged.

Internal remedies, excepting opium, are of but little value; gallic acid, sulphuric acid, acetate of lead, and especially ergot, are prescribed, but are of little or no benefit. The wound must be closed, the patient lie upon the injured side, and keep perfectly quiet, that the heart's action may become feeble and the effused blood coagulate and close the mouth of the bleeding vessels.

The shock is best treated by stimulants, anodynes, and external heat. Nitroglycerin, strychnine, brandy, ether, and digitalin should be given hypodermically. In extreme collapse from shock and hemorrhage I have seen a prompt and steady reaction follow the injection of normal saline solution. In the effort to bring about reaction great care must be exercised lest we stimulate too much and cause the wound to bleed afresh.

All foreign substances must be carefully removed from the wound, but in doing so the injured parts must be disturbed as little as possible for fear of causing bleeding or infecting the wound. Under no circumstances should the wound be probed except with the finger, first rendered aseptic.

The wound and surrounding surfaces must be thoroughly cleansed and made aseptic by the use of antiseptics, if need be; then the wound is closely brought together by deep and superficial catgut sutures, so completely approximating the edges as to prevent the admission of air. Over the wound must be applied an aseptic dressing, and the movement of the chest wall must be prevented by firmly applying a bandage, preferably a plaster-of-Paris jacket.

The patient should be put to bed with the shoulders and chest slightly elevated, and the utmost quietude enjoined; and especially should the patient be forbidden to talk. The diet should be liquid, nutritious, but non-stimulating. To relieve pain and quiet restlessness, morphine hypodermically should be given.

After two days a brisk cathartic should be administered. The room should be well ventilated and thoroughly cleansed, for it is absolutely necessary that the patient should breathe pure air, free from any microorganisms. In an infected atmosphere, where pyogenic germs are carried into a wounded lung by respiration, patients seemingly get well only to succumb after weeks, or perhaps months, to pulmonary inflammation, the result of infection through the respired air.

While penetrating wounds of the chest are in their very nature serious and dangerous, sometimes producing frightful damage to the thoracic viscera and tissues, yet it is gratifying to see so many recoveries the result of an intelligent, bold, and persistent treatment.

A NEW DEPARTURE IN MEDICAL SOCIETY WORK—THE PATHOLOGICAL DEPARTMENT OF THE INDIANA STATE MEDICAL SOCIETY.

BY FRANK B. WYNN, A.M., M.D., INDIANAPOLIS,
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The medical society has wrought powerfully for the advancement of modern medicine, adding to the members' knowledge of methods in diagnosis and treatment, stimulating investigation, discovery, and authorship, and fostering professional cordiality. Intelligent and progressive physicians were quick to appreciate the society movement and give it their enthusiastic support. Three decades have witnessed most prolific multiplication of medical societies. The little leaven of a few years ago has now leavened the whole lump. There are county, district, city, State, national, and international organizations, representing general medicine and the specialties. As with medical colleges and journals, so may the tendency to excessive society multiplication be deplored. While with reason it may be urged that a surfeit of medical organizations exists, a large majority have a justification for existence.

A worthier criticism might be offered upon the volume and character of matter read at society meetings. The views here expressed are more especially applicable to the larger organizations which convene annually. It may be asserted without fear of controversy that too many papers are submitted. A few only have just claim to originality; some are attractive and vigorous in style; others are conspicuous for their tedious length and dreary compilations. Taken all in all, the effect, even upon the most attentive listener, is in the long run somnolent. Present problems of society reform are the curtailment of programmes, the condensation and elimination of papers, and the introduction of practical features which will entertain, instruct, and make plain the latest advances of medical science. The surgical furor of the day has led occasionally to the operative clinic as a practical and interesting digression from the monotony of the usual programme. But the valid objection is offered that it consumes too much time. Besides, the personal advertisement it gives is apt to lead to professional criticism and discord. Prompted by a conviction that there were other practical features less objectionable and equally interesting and instructive which might be made valuable adjuncts of society work, the Committee on Pathology of the Indiana State Medical Society sent the

following circular letter to each of the sixteen hundred members in November, 1897:

It has been determined to inaugurate a practical feature in this department — an exhibit of microscopical and gross pathological specimens, as well as bacteriological demonstrations—at each annual meeting of the State Society. It is thus hoped to arouse greater interest among the profession on these important subjects, which are so essential to a thorough knowledge of the modern methods of physical and clinical diagnosis. By this means many valuable cases will come to the notice of scientific medicine which would otherwise be lost to the profession.

The Committee looks to the hearty cooperation of the members of the State Society for success in this departure. It is urged that the practitioners make autopsies as frequently as they can be obtained. If possible, let specimens be removed *in toto* and without mutilation. They should be washed, placed in preserving fluid (three-per-cent aqueous solution of formaldehyde, alcohol, or brine), in a fruit-can, stone jar, or other temporary container, and forwarded at once to the Committee for examination and classification. Small pieces for microscopical examination will not be considered unless accompanied by the gross specimen. The Committee further reserves the privilege of determining whether or not a specimen has the pathological merit warranting the time and expense of its preparation for exhibition. For example, a simple uterine fibroid is too common to afford pathological interest, but if this neoplasm shows sarcomatous change, its value becomes greatly enhanced. Typical and beautifully defined specimens of whatever sort are earnestly desired. Those involving internal organs will be particularly acceptable, especially if attended during life by unusual physical signs or difficulties in diagnosis. Each specimen should be accompanied by as complete a clinical history of the case as it is possible to obtain. The Committee will provide jars for exhibition of the specimens.

We trust your enthusiasm will be awakened in this matter. If the plan meets with the support we expect, it will mark the Indiana State Medical Society as unique and progressive, and afford to attending members a valuable museum of instruction.

Those interested in the success of this new departure did not rely upon the circular letter alone. Agitation, appeals to professional pride, and professional solicitations were resorted to, according to occasion and requirement. At the first annual meeting (1898) following the appeal by letter, one hundred and seventy-five gross specimens were exhibited. The sentiment of members was universally and enthusiastically commendatory of the new departure. Good seed was sown which brought forth a more bountiful harvest the year following.

At the meeting of 1899 the collection numbered about eight hundred, including, besides gross specimens, photographs of interesting cases. This does not include a large number of specimens which were not deemed of sufficient value to preserve.

Each donor was provided with a form to be filled out giving the family and personal history of the patient, record of the case, and a report of the necropsy. The pathological diagnosis and description of the specimens were entered by the Committee. These sheets were numbered to correspond to the jar labels, and bound for reference in case any visitor desired to look up in detail the history of the case. It is not improbable that the publication of these records will be undertaken by the Society in the near future.

Formaldehyde has been the preservative chiefly relied upon. It is both cheap and easy of application. Not taking into account the labor and time of the committee, the chief expense has been that of jars. These were in the main borrowed from colleges for the period of the meeting. During the remaining time the specimens were first hardened in separate vessels and afterward packed (wrapped when necessary) in larger containers.

The material and work have been classified under headings as follows:

1. *Animal Pathology.*—The identity of many disease processes in man and beast has made it possible better to work out the various stages of pathological change. Not a few contagious affections in man have been contracted from beasts. Hence the important mission of animal pathology in preventive medicine. Through it alone has experimental pathology been made possible, yielding the fruitful discoveries of bacteriology and serum-therapy. Animal pathology, therefore, is entitled to a dignified position in the department. A considerable number of specimens were shown, valuable within themselves as well as for comparative study. Inoculation demonstrations constituted one of the features of this branch.

2. *Bacteriology.*—The work here included, of course, the presentation of pure cultures and guinea-pig experiments. The chief aim, however, has been to present tangible proofs of the important relationship between bacteriology and diagnosis as well as its bearing upon sanitation and all surgical procedures. The Widal test and various culture experiments were shown, proving atmospheric contamination in crowded and badly ventilated rooms, and illustrating the dangers of failing to sterilize instruments. It was sought to make plain that the surgeon or practitioner who would appreciate the full meaning of sepsis and asepsis should possess a practical laboratory knowledge of bacteriology.

3. *Pathological Anatomy.*—This was made the conspicuous feature of the department, representing the bulk of the labor and of the exhibit. It must not be inferred that the intent was to depreci-

ate the important rôle of bacteriology in modern medicine. It will be freely admitted that no branch rivals its practical contributions to medical science during the past two decades. A grain of truth, however, is contained in the claim that professional eagerness in pursuit of the germ theory of disease and its practical applications is apt to make us forgetful of the important relationship between gross pathology and diagnosis. Pathological anatomy forms the basis of all rational diagnostic procedure. Familiarity with gross pathological structures is to the physician who would diagnose disease correctly what accurate knowledge of anatomy is to the surgeon who would operate successfully. Each in its way is essential to the attainment of highest results.

4. *Historical Branch.*—Although not strictly within the province of the Department of Pathology, it has been determined to introduce at the next annual meeting of the State Society a historical exhibit. Rare old medical books and reprints, programmes of pioneer medical meetings, old surgical and medical instruments, and supplies of whatever sort are being solicited. Such a collection will prove interesting and instructive as showing the progress of medical science in general and the history of its advancement in the State.

In the writer's judgment the manner of presenting the exhibit was one of the important factors determining its success. However excellent the array of specimens, had their examination been left to the casual inspection of the members as they strolled into the exhibit room, but slight knowledge would have been disseminated and meager enthusiasm aroused. The plan followed was to have constantly present three or four competent demonstrators who were familiar with the points of interest in the specimens and the salient facts in the history of each case. They were kept busy making systematic rounds of the collection, demonstrating the specimens in succession to small groups of the visiting doctors. By this means each visitor got the fullest possible benefit of the exhibit. Not an attending member of the Society failed to make the round of demonstrations — some of them several times.

The unanimous verdict of the membership concerning this unique departure in State society work was highly commendatory. This was gratifying to the committee and constituted the sole compensation. The sentiment of approval was forcibly expressed in the fact that the Society voted an appropriation to bear the expense of taking the major part of the exhibit to the meeting of the American Med-

ical Association in Columbus. Its cordial reception at that place is a matter in which the Indiana profession takes just pride. Interest has been stimulated in every quarter of the country. Numerous letters have been received by the writer from those contemplating a similar movement in other States.

To such a word of suggestion from one who has been over the ground may prove helpful. The movement will not go of itself; it must be pushed. In two or three years it will acquire momentum. Hence the committee should consist of young men with burning enthusiasm and untiring capacity for work. The chairman should have the privilege of selecting his associates and assistants. Many disappointments will chill the ardor, but abiding patience and persistent effort under proper direction will most certainly assure success.

The Indiana State Medical Society places a high intrinsic value upon its pathological collection, very few medical colleges in the country (this statement is made advisedly) having its equal. The little leaven of 1897, with proper mixing and patient kneading, has given in 1899 many loaves and to spare for our neighbors. The practical educating influence has extended to the entire profession of the State. Practitioners everywhere have been stimulated to make post-mortem examinations, not so much in quest of practical pathological knowledge for its own sake, but with this motto in mind: *The gateway to skilful diagnosis lies through a practical knowledge of pathology.*

ECTOPIC PREGNANCY.

BY J. W. LONG, M.D., SALISBURY, N. C.

Definition.—The term ectopic pregnancy is preferable to that of extra-uterine pregnancy, because (1) the word ectopic means "out of place," and in these cases the product of conception is out of the normal place; (2) it is claimed that in one variety (the so-called interstitial) the fetus actually develops within the uterine tissue, therefore can hardly be called extra-uterine.

Physiology.—It may be stated briefly that conception normally occurs in the Fallopian tube. This statement is contrary to the views held by earlier obstetric writers, who supposed that fertilization of the ovum occurred in the upper part of the uterus; the tubal cilia having wafted the ovum downward and the uterine cilia the spermatozoa upward. Hofmeier has shown by recent observations that the current of the uterine cilia is like the tubal current from above downward. Again, in the lower animals, spermatozoa have been observed time and again to make their way up into the tube, and have been seen swimming in the peritoneal fluid on the surface of the ovary, where, as Kelly says, they lie in wait for the ovum. These facts, together with the additional knowledge that spermatozoa may retain their vitality for a long time after copulation, even as much as six months in the female bat, and, according to Duhrssen, as much as three and one-half weeks in woman, certainly tend to show that fecundation normally occurs in the tube. Therefore it may be confidently stated that an ectopic pregnancy is one in which the normal downward passage of the fertilized ovum through the tube has been arrested.

Causes.—In a general way it may be stated that the arrest may be due to:

1. Obstacles within the lumen of the tube.
2. Some disease or abnormality of the wall of the tube.
3. Factors external to the tube, encroaching upon or obliterating its lumen.

Under the first head may be mentioned intra-tubal growths and constrictions; under the second, salpingitis, persistence of fetal type, multiple ostia, etc.; while the third division embraces tumors, adhesions, twists, bends, and, in fact, anything tending to hinder the free passage of the fertilized ovum along the lumen of the tube.

Pathology.—As this is a clinical paper, the pathology may be dealt with briefly. It should be noted that while the placenta develops at the abnormal location of the fetus, it is only the fetal

portion that does so, while the maternal portion of the placenta develops in the uterus. It is this maternal portion that at some time during the progress of the case is cast off and often leads the obstetrician to believe that an abortion has occurred. At the point along the tube where the impregnated ovum may find lodgment there begins at once an active congestion, resulting in the thickening of the surrounding tissues and the formation of the fetal sac. Following the primary thickening there occur thinning and stretching of the fetal sac at its weakest and most unprotected point. This is due to the rapid growth of the ovum or to hemorrhage within the sac. The outcome of the extreme thinning and softening of the tissues is rupture of the sac, allowing the contents to escape either into the abdominal cavity or between the folds of the broad ligament. This usually occurs from the eighth to the twelfth week. Exceptions to this statement may be noted. It is barely possible for the pregnancy to go to term without rupture of the tube. When rupture does occur the placenta may retain its hold in the tube while the fetus escapes into the peritoneal cavity, or the rupture may occur between the folds of the broad ligament and even be followed later by a secondary rupture into the peritoneal cavity.

The limitations of this paper forbid even a mention of all the pathological freaks that may take place. The most important feature of a rupture is the hemorrhage. But for the hemorrhage and the subsequent infection, the rupture of an ectopic fetation sac would probably cause very little disturbance. If the hemorrhage is at all profuse, there is at once profound shock and even death. The hemorrhage takes place in the direction of the rupture, either into the peritoneal cavity or between the folds of the broad ligament. If in the latter place, it is limited by the resistance of the tissues, and is therefore not so dangerous as when it escapes into the peritoneal cavity. If the woman survives the first shock of a peritoneal hemorrhage, adhesions quickly form, being nature's supreme effort to save the peritoneum from further invasion. Even after adhesions have formed, hemorrhage may continue or recur, accompanied by shock, heart failure, etc.

It is readily understood how the conditions presented by the rupture and hemorrhage offer a favorable nidus for the development of infection, and, as a matter of fact, this usually occurs in those cases that do not immediately succumb. As a result of the infection we have the blood-clots breaking down into pus, forming a so-called pelvic abscess, or the infection may be more wide-spread, producing general peritonitis and septicemia. In either event death is likely to terminate the case unless surgical measures are resorted to.

In the general wreck the fetus is, as a rule, lost sight of; it is either absorbed by that great lymphatic gland, the peritoneum, or is broken down and lost in the suppurating mass. However, the fetus may escape with its life and go on to term either as an intra- or extra-peritoneal pregnancy; or, life having ceased, it may be converted into an encysted mass or lithopedion.

Clinical History and Symptoms.—It is believed that a tubal pregnancy is more apt to occur after a period of sterility. A woman sterile for some years is seized with the ordinary symptoms of pregnancy; often, in addition, there is a different or "queer feeling," as she expresses it. Perhaps the last period, instead of being entirely absent, was a mere dribble. She will probably miss the next period, and at about the eighth or ninth week will notice her linen slightly stained, and there will pass from the uterus "some pieces of flesh" resembling the products of an abortion; indeed, they are pieces of the maternal portion of the placenta. Rupture of the fetal sac often occurs about this time. This may be precipitated by any act of violence, as a misstep or blow. One of my patients ruptured her tubal pregnancy by a sneeze. The prominent symptoms accompanying a rupture are pain, shock, collapse. If the patient survives the primary shock and hemorrhage, she will suffer all the horrors of peritonitis and sepsis. One patient that I saw told me that she suffered so fearfully that she got down on the floor and tried to butt her brains out against the wall.

Physical Signs and Diagnosis.—A physical examination prior to rupture will reveal a pulsating tumor occupying the situation of one of the tubes. The presence of such a tumor with the symptoms of pregnancy should determine operation. After rupture, the diagnosis is still more easy because of the history, first, of the symptoms of pregnancy; secondly, of the shock and collapse. In doubtful cases, err on the side of mercy and operate.

Treatment.—Prior to the fifth month, or the period of viability, whether before rupture or after, there can be but one rational treatment, and that is surgical. Among surgeons this question is beyond cavil. After the fifth month the interests of the child demand that we wait, but do not cease to watch and be ready to operate at a moment's notice.

Operation.—The method of operation will be determined by (1) the conditions present, and (2) the predilections of the operator.

Briefly, my choice in all unruptured and newly ruptured cases is to operate through the abdomen; in cases that have been ruptured some days or weeks the best route is through the vagina, as a rule.

Report of Cases.—My experience with these cases has not been large, having seen only six, so far as I know. I add this qualification because I am convinced that this condition, like appendicitis, often passes unrecognized. I append the report of only a few cases by way of illustration.

Case 1.—Mrs. M——, aged about 19, the wife of a member of our graduating class, came into my office with her husband, who wished me to examine her. She had missed one period, and at the time of the second one began to dribble, and passed several pieces of flesh-like tissue. She had complained of constant pain in the right pelvic region for several weeks. On examination I found the uterus slightly enlarged, while to the right was a pulsating mass the size of a small orange. The tumor was freely movable, and I expressed the opinion that it was probably an ectopic pregnancy and advised an immediate operation. I had just lectured on the subject of ectopic pregnancy, and this young doctor and his wife had been reading up the subject, so they readily acquiesced in my advice. The same day the lady was taken to the Old Dominion Hospital, where I operated. After being put under an anesthetic she was examined by my colleague, Dr. George Ben. Johnston, who agreed in the probability of an ectopic pregnancy and the indications for an operation. He also kindly assisted. When the abdomen was opened there was found several ounces of fresh blood in the pelvis. The right ovary was the site of a newly ruptured tumor containing blood-clots. No fetus or definitely formed placenta was seen, nor was the tube involved. The rupture must have occurred between the time I saw her in my office in the morning and the time when the abdomen was opened. It is probable that the sac was ruptured during the examination under anesthesia, as both Dr. Johnston and myself palpated the parts bimanually.

It may be objected that this case was not certainly one of ectopic pregnancy. I grant the exception, but it must be admitted that the history of a newly married woman, amenorrhea, the recent pain and discomfort in the right side, the gastric disturbance, the dribble, the passage of flesh-like lumps, the tumor, the fresh blood in the abdomen, all point to an ectopic pregnancy.

Case 2.—Mrs. G——, sterile several years, had missed two periods. In the ninth week she was sitting at the breakfast table, when she sneezed, and was at once taken with a violent pain in the left side of the pelvis and fell to the floor greatly shocked. My friend, Prof. C. A. Blanton, was called to see her, and later at his request I saw the case with him. At the time of the consultation a

tender mass could be felt filling the left pelvis. On opening the abdomen we found the left tube to be the site of an ectopic pregnancy. The fetus was not seen, but the placenta was removed from the tube and later the tube itself. The rupture had occurred on the anterior surface of the tube, and the hemorrhage consequently had escaped into the anterior segment of the pelvis above the bladder, and not into the cul-de-sac.

Case 3.—I was asked by my associate, Dr. John Whitehead, to see a colored woman, the mother of several children, who, after missing several periods, was seized with an intense abdominal pain, shock, etc. The woman had been in the throes of peritonitis three months when first seen by Dr. Whitehead. The next day he asked me to see the case with him. A mass was found filling the entire pelvis and extending half-way up to the umbilicus. The woman was much emaciated and *in extremis*. We feared to give much anesthetic, so Dr. Whitehead cautiously administered a very little, while I quickly made an incision in the posterior vaginal fornix, opening into a large septic cavity full of broken-down blood-clots, detritus, and pus. Free drainage soon brought this woman from a mere skeleton to 160 pounds, her usual weight.

Case 4.—Mrs. R——, a western lady, recently moved to a North Carolina town, having been several years sterile, missed two periods, and becoming anxious about herself introduced a pencil into her uterus. Shortly afterwards uterine pains and flow set up. These continued for a week, when she was suddenly seized with an agonizing pelvic pain, precipitating her into a profound shock. Dr. Staunton, of High Point, was attending her, and the woman having confessed the use of a pencil, he suspected a ruptured uterus. And he certainly had good reason for thinking so. The woman rallied after a few hours, and the next day had another attack. On the fifth day I was asked to see the case with Dr. Staunton and Dr. Scott, of Mebane. I found the woman highly septic, delirious, vomiting, and greatly prostrated; temperature ranging from 102° to 104°; pulse frequent and feeble; abdomen tympanitic and tender. On bimanual palpation the pelvis and half the abdomen were found to be filled with a very tender mass, while the uterus was pushed upward and well to the front. The case was puzzling, but I expressed the opinion that it was one of ruptured ectopic pregnancy, in spite of the pencil episode. Drs. Staunton and Scott concurring, we lifted her gently on to a cot, placed the cot in the baggage car, and took her to Salisbury, where she was operated on immediately on our arrival at the Sanatorium. A vaginal

incision opened at once into an immense cavity filled with blood. Putting in two fingers I brought forth the fetus and more than half a gallon of blood-clots. The adherent right tube and ovary, with placenta attached, were loosened up and drawn through the vaginal opening, a ligature was placed around the tube close to the cornua, and the right appendages cut away. A rubber T-drain was placed in the cavity and stitched to the side of the incision, while plain gauze was firmly packed into the cavity. This woman was *in extremis*, yet in spite of the wide-spread peritonitis and sepsis she progressed steadily to a perfect recovery.

I have operated on two other cases—one ruptured and the other unruptured—but will not give the details of them; suffice it to say that all my cases have recovered.

ETIOLOGY OF ECLAMPSIA.[1]

BY CHARLES B. REED, M.D., CHICAGO,

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It would seem as if some apology were necessary for again presenting to the Society a paper on the etiology of eclampsia, after the exhaustive discussion of the eminent essayist of a year ago. The importance of the subject and a desire that the Society may use its opportunities to investigate in a new direction are sufficient justification. The past year has brought forth some new material, which is suggestive in this connection.

The etiological agents which have been so thoroughly discussed are familiar to all of you, and will receive no mention. For the purpose of this paper all phenomena in connection with the brain, kidneys, and urine, to which etiological importance has been attributed, are not to be regarded as causative factors, but only as results, or at most as of accessory importance. It is evident that this statement does not harmonize with many currently received opinions, but I hope to show with some plausibility that a different doctrine is at least entitled to earnest consideration.

The importance of the blood and circulatory apparatus as carriers attracts attention to the theory which seems to present the greatest degree of inherent probability — a toxemia with a possible predisposing cause in hereditary irritability of the nervous system; a condition of the blood due to the circulation of a poison or poisons, the nature of which is at present undetermined. It is not uric acid, it is not creatin, but it is known that there is excreted by the urine a toxin as yet unseparated (Fultz and Ritter, confirmed by Bouchard), which may, upon final isolation and analysis, be found to be this poison. Probably it is a leucomaine of the uric acid group. For the reasons which follow, it is believed that the source of this toxin is in the uterine metabolism. This opinion, supported by the investigations of Lange, from whom extensive quotations will be made, follows from a logical examination of the local conditions associated with eclampsia. It is established that eclampsia only occurs during pregnancy and the puerperium. The system of the eclamptic, therefore, is the same as before pregnancy, with the one exception of the growing uterus and its contents. Only such metabolic product can be considered as occurs in pregnancy.

[1] Read before the Illinois State Medical Society, May, 1899.

The fetal origin of the toxin is supported by such names as Chrobak, Potter, Kollmann, and others, but to establish this position it is necessary to show a direct connection with the fetus *in utero*. Aside from the difficulty, if not the impossibility, of doing this at present, it would not explain the cases which originate postpartum. It seems more probable that either the uterus or placenta, or both conjoined, are the responsible sources of the toxin. The placental metabolism is not yet sufficiently understood to be considered in this connection, more than to refer to its possible importance (Schmorl) in the alteration of the maternal blood by some coagulating substance. Gynecologists have long recognized tachycardia in uterine fibroids. Is it not possible for the active proliferating muscle cells in the growing uterus to develop a metabolic product which may produce systemic effects? In some cases of fibroid a distinct myocardial degeneration is produced which may end fatally (Riesman). The large size of the uterus is not the cause of the eclamptic attack, for this condition is found in other states of the organism where eclampsia does not occur, as in the large fibroid and ovarian tumors.

It was shown by Winckel, and confirmed recently by Byers and Morisani, that when the fetus dies *in utero*, even when the premonitions of eclampsia are present, the danger is diminished if not removed. When the child is living and premature labor is induced, the attacks usually cease. The inference is that, when uterine activity is abolished, the liability of an attack is greatly diminished. This is further supported by the fact that attacks occur more frequently among pluriparæ, which is due not to distention, nor to the presence of one or more ova, but results directly from the increased uterine metabolism. Perrochet closely approximates the above views when he attributes eclampsia to a poisoning of the blood by metabolic products from the placental circulation, urate poisoning, and ptomaines, and states that the poisoning increases the irritability of the brain.

The clinical history of eclampsia is that of a toxemia. According to Zweifel, multiple thromboses are invariably found post-mortem in the liver, lungs, and brain, which would indicate the presence in the circulation of some product of organic change with blood-coagulating power. It has been shown by Chamberlent's experiments that the toxicity of the blood is increased in both mother and child, when the former presents eclamptic symptoms. As Koetenbach says, "the prodromata, gastric and cerebral symptoms, the rapid occurrence of serious disturbance of the brain, the post-mortem increase of temperature, the nature and frequency of the nerve dis-

orders that follow and find their analogy in the neuroses consequent upon typhus and diphtheria, probably caused by toxalbumens, are scarcely to be explained unless by the theory of blood poisoning."

The post-mortem appearances also confirm the belief that the toxin works throughout the blood. Schmorl found in seventeen cases the liver hemorrhagic, sometimes anemic, necrosis of the parenchyma, venous and capillary thromboses in the vicinity of the necrotic foci, but not in the necrotic portions, thus showing that the thrombus represents the beginning of the process. The liver presents nothing pathognomonic of eclampsia, but of infection; degeneration of the liver cells with or without hemorrhage (Bar and Guyisse). The lungs show extensive venous and capillary thromboses and edema, the heart flaccid, and the spleen enlarged. Jagodinsky found in eight cases of puerperal eclampsia cloudy swelling and fatty degeneration of the nerve cells of the cerebral cortex and ganglia, in some cells even necrosis; blood extravasations in the vicinity of the vessels, and effusion of white blood-corpuscles. The neuroglia cells were increased. He attributes the changes to inflammation, but they easily adjust themselves to the present theory.

Toxins spend their power largely upon the nervous system, and in proportion to the development of the nervous system their effects become perilous. The most sensitive nervous systems are those in which eclampsia is most frequent, those in which hysteria, epilepsy, neurasthenia, dipsomania, or neuralgias of long standing are prominent clinical facts. This influence can be transmitted in families, and would naturally be increased in the unmarried. It is not sufficient, however, to say that this neurotic temperament will explain the vomiting, chorea, faintness, headaches, and vagaries of a pregnant woman, nor is the uterine reflex theory satisfactory. Many infectious diseases begin with vomiting, and in them, as in pregnancy, it may be so persistent as to threaten life; here also albumin appears in the urine after a longer or shorter time, and may herald the approach of uremia with eclampsia or coma, or both.

It has been settled by many observers that the heart is enlarged in pregnancy, the left ventricle more than the right; it increases during the course of gestation, is at its height at labor, and disappears when delivery is accomplished.

If in scarlatina we first see vomiting, then nervous disturbance, then albuminuria, then enlargement of the heart, we would say that there was certainly some toxin circulating in the blood. Why not in pregnancy? This hypothesis has been strengthened recently by Lange's very interesting article on the thyroid gland in relation to pregnancy. His work extended over four years, and as the result

of his examination of women and experiments on pregnant cats, he concludes "that a hyperplasia of the thyroid gland is physiological in pregnancy," thus confirming Freund's investigations. "This hyperplasia is never observed in the affection of the kidney peculiar to pregnancy. In chronic nephritis, on the contrary, it occurs in pregnancy. Pregnant cats require for the maintenance of their health larger thyroids than the non-pregnant. After the total extirpation or the removal of more than four-fifths of the thyroid, tetany occurs in pregnant animals, which is promptly relieved by the administration of thyroidin. When a remnant of the gland is left large enough to keep a non-pregnant cat healthy, there will occur in the pregnant cat a kidney disease of rapid course, which sometimes gets well without bad symptoms after the cat litters, and at other times produces convulsions and coma. These convulsions are not identical with tetany, and are just as little influenced by the thyroidin as the coma. Thyroidin has an undoubted symptomatic influence over the pregnancy kidney of women; whether specific or not remains to be determined."

He examined 133 pregnant women, and in all but twenty-five, three of which were doubtful, he demonstrated thyroid enlargement at some period of the pregnancy. In the eighteen cases wherein the gland was not enlarged there was absolutely demonstrated "pregnancy kidney" and albuminuria, which in six instances terminated in eclampsia, and in four of this small number severe headaches appeared, which are often premonitory signs of eclampsia. In two cases where nephritis was present before pregnancy, the gland enlarged as usual.

The significance of these findings is very great, if they are confirmed and developed by further experiments. To test the hypothesis, let us assume that a product as yet chemically unknown, arising from uterine metabolism, is poured into the blood, and by its influence exercises a specific influence upon the thyroid gland, whereby a hyperplasia of the latter is gradually produced, which may be called "pregnancy goitre," and the glandular secretion, probably thyroidin (Bauman), which represents most nearly the product of the physiological activity of the gland, is developed in large quantities. The function of the thyroid is to regulate metabolism. The product of the activity of the hyperplastic gland neutralizes the uterine product. In this case the pregnancy runs a physiological course and exhibits a minimum of the usual disorders of pregnancy. This may occur where the kidneys are healthy, or in the presence of chronic nephritis.

Assume again that for some reason the physiological hyperplasia does not appear, as in the eighteen cases recorded by Lange. The uterine metabolic product, imperfectly neutralized by the small thyroid, and the insufficient production of thyroidin, circulate through the system and produce the toxemia, the effects exhibited being those of degree. The kidneys and the bowels assist in the disposal of the toxin. Probably a large portion is absorbed by the kidneys and excreted possibly in an allotropic form. If in too large quantity for easy elimination by the kidneys, or perhaps from the direct effect of the substance in its passage, or by its presence in the blood, albuminuria occurs, and the kidney of pregnancy. The albumin is not the toxin, but an effect of the toxin; an alteration in venous pressure will produce albuminuria, and the circulation of toxins of diphtheria and scarlatina will do likewise. In exceptional instances the kidneys may excrete the toxins without evidence of disturbance. If from excess of production or inefficiency of the thyroid a gradual accumulation of toxic material occurs, the symptoms of toxemia slowly disappear with the usual signs of intoxication. Persistent vomiting is the most constant of these, and may be the only symptom exhibited throughout the pregnancy. In other cases the symptom reaches the point of saturation, and a trivial incident may suddenly precipitate a maternal eclamptic attack, intra-uterine eclampsia, or premature labor, as Olshausen observed in 40 per cent of his cases.

It is interesting to compare the various periods of the eclamptic seizures with the periods of glandular hyperplasia. In pregnancy the eclamptic attack is most common from the seventh to the ninth month. The "pregnancy goitre" appears in primiparæ usually in the sixth month, and in multiparæ in the fifth, thus anticipating the possibility of attack by from two to three months; but the greater number of the attacks occur about the tenth month, when the uterine metabolism has reached its maximum.

In cases which occur postpartum, the cause may arise from the process of involution, and consequent increase in the system of cell products, or the toxic products of uterine metabolism locked up in the cells of the uterus may be released by involution, or suddenly by the activities of labor, and thrown in large and unmanageable quantities upon the system.

Further experimental observation is necessary to confirm our belief in this hypothesis, but it is certainly a relief to turn from the numerous and unsatisfactory theories of the past to one with so promising an outlook.

BOOK REVIEWS.

Clinical Lectures Delivered Before the Students of the Imperial Moscow University. By G. A. Zacharin, M.D. Translated by Alexander Rovinsky from the Fifth Russian Edition. Boston: Damrell & Upham. 1899.

The translation of Zacharin's lectures into English places in the hands of English students a comprehensive picture of this great Russian clinician. Among his countrymen he was ranked as the equal of Pirogoff and Bodkin. He was the attending physician of the late Emperor Alexander III., who died of acute interstitial nephritis. Zacharin rose from poverty to eminence in his profession, had an enormous practice, and accumulated a considerable fortune, from which, on his death, a half million rubles was donated to the parochial schools of Russia.

These lectures are now ten years old, and, of course, no reference is found in many of them to the later means of diagnosis. Nevertheless, they will be found to be of interest, from the fact that they approach the study of disease from an original standpoint, quite different from that to which we are accustomed in German, French, and English literature.

After a short introduction on the importance of the clinic in medical education and the necessary requisites of clinical instruction, the author enters into a description of cases. The first case fills eighty-five pages and furnishes a text for ten lectures. In these lectures the author discusses extensively the value of mineral waters in the treatment of disease, and more particularly in reference to the needs of the case under discussion. The body of the work is made up of a description of only twenty other cases, from which it is to be argued that the Russian teacher did not need a large number of cases to illustrate his clinical work. The remaining portion of the volume consists of short articles on the treatment of fever, syphilis of the lungs, syphilis of the heart, the use of calomel, and the elements of balneotherapy.

Klinische Erfahrungen über Diabetes Mellitus. By Dr. E. Kulz nach dem Tode von E. Kulz bearbeitet und herausgegeben von Prof. Dr. Th. Rumpf unter mitwirkung Dr. G. Aldehoff und Prof. Dr. W. Sandmeyer. Jena: Gustav Fischer. 1899.

A work of 552 closely printed pages dealing with a single disease forms a monograph worthy of an exhaustive review. The size of the work, however, makes a critical study of it practically impossible in the space at our command.

The first 240 pages are taken up with a description and clinical history of 692 cases; these are divided into four groups, the first dealing with those cases in which, under a strict diet, sugar disappears from the urine and there is no involvement of the kidneys. The second group includes those upon a strict diet in which there are only traces of sugar, but in which the kidneys are more or less involved. The third, those in which, by the strictest diet, sugar does not disappear from the urine. The fourth includes the mixed or transition forms, which are divided into four subdivisions: (*a*) those mixed cases in which there is frequent change of form; (*b*) those which pass from the severe

to the light form; (*c*) those which change from the light to the severe form; (*d*) those which show a general progressive tendency. These different groups are exhaustively discussed by Rumpf, who also contributes chapters upon symptoms and complications, diagnosis, and treatment.

Sandmeyer contributes a thorough study of ammonia and its elimination in diabetes; also a chapter upon acetone and acetic acid in their relation to diabetes. The work closes with an extensive discussion of diet in this disease.

Taken as a whole, the work forms the most exhaustive discussion of diabetes that has so far been published.

THE TREATMENT OF PELVIC INFLAMMATIONS THROUGH THE VAGINA. By William L. Pryor, M.D. Price, $2.00. Philadelphia: W. B. Saunders. 1899.

This small work of 248 pages is strictly confined to the description of the operative technique of pelvic inflammations by vaginal section. Only so much of the pathology is introduced into the work as is necessary for the understanding of the operative methods. Especial stress has been laid upon the physical characteristics of the intraperitoneal pelvis as revealed by vaginal section. Necessarily, their inspection by this route brings out a somewhat different relation than by abdominal section.

The author discusses the various conditions for which these operations are made, under the terms endometritis, pelvic inflammations, salpingitis, pelvic peritonitis, tubercular peritonitis, inflammatory diseases of the ovaries, broad ligament cyst, adherent retropositions, broad ligament abscess, and diffuse pelvic suppuration. In addition, there is a description of the exploratory vaginal section, with chapters upon the preparation of the patient, morcellation, after-treatment, including the accidents and complications and secondary hemorrhages.

We confess that we do not see the exact purpose to be filled by this book; it contains but little new matter, the bulk of what is found in its pages being obtainable in any good work on gynecology. As a special plea for the vaginal over the abdominal route in the treatment of these conditions, it has a certain amount of value. It is well illustrated, and acquires its chief value from the precise directions which accompany the various operations. They leave nothing to be desired in the way of fulness of detail. The illustrations, in many cases diagrammatic, are 110 in number, and are, for the most part, carefully selected for the needs of the practical surgeon.

DIAGNOSTIC DES MALADIES DE LA MOELLE. Par Dr. Grasset. Paris: Librarie J. B. Bailliere et Fils. 1899.

This little work of ninety-four pages is a clever introduction to the study of the diagnosis of cord lesions, and is especially devoted to the localization of various diseased processes in the cord. Diseases of the cord are divided into eight syndromes, as follows: Those connected with the posterior columns, including disorders of sensation and ataxia; those disturbances connected with anterior lateral columns of the cord, including spasms, contractures, and intentional tremor; those with the posterior and lateral columns, with ataxia and spasms; the forms of anterior horn disease, characterized by muscular atrophy; a syndrome in which there is associated disease of the lateral columns and anterior horns, giving a spastic muscular atrophy; the syndromes connected with the central and posterior portions of the gray matter, marked by

disassociation of sensation and vasomotor disturbances; the forms associated with anterior horn disease, in which there is muscular atrophy, disturbance of sensibility, and vasomotor changes; a general paralysis.

The above includes the topographical diagnosis of the diseases of the spinal axis. The remaining portion of the work discusses the diagnosis of the different diseases of the cord in reference to their location from above downward. There is a general description of the methods employed in determining the segments affected, and then follow nine syndromes which relate to the different segments of the cord. These include those symptoms which are referable to the conus, the sacral enlargements, the lumbar enlargements, the dorsal region, the cervical region, and the cervical enlargements.

THE BULLETIN OF THE OHIO HOSPITAL FOR EPILEPTICS. Nos. 2 and 3 of Volume I. Gallipolis, Ohio: Published by the Hospital. 1898.

This handsomely printed and illustrated book of 236 pages forms an exceedingly valuable contribution to the literature of epilepsy. The volume opens with a brief analysis by H. C. Rutter of the statistics of the institution, which shows that for the five years ending November 15, 1898, 1287 individuals have been admitted. Of these, 473 have been discharged—eighty-one were recovered, 180 improved, 104 unimproved, and 108 died.

The main portion of the report is composed of a series of papers by A. P. Ohlmacher on the pathology of epilepsy. In the five papers which make up the contribution of Dr. Ohlmacher, there is a careful description of twenty-five autopsies. The first paper includes a general survey of the twenty-five autopsies, with a description of the technique employed. There follows a study of five cases which lends additional support to the previously expressed views of the writer as to the importance of the lymphatic constitution in idiopathic epilepsy. Following this is a study of epilepsy associated with complicating conditions in the nervous system.

The value of this report cannot be overestimated. The twenty-five autopsies have been made with the greatest possible care, and are complete. In all cases, not only is the central nervous system examined, but all the internal organs removed and carefully dissected. Special methods have also been devised for the preservation of these organs, that they may be made valuable for further study.

AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. Newman Dorland, A.M., M.D. Second Edition, Revised. Price, $1.25. Philadelphia: W. B. Saunders. 1899.

In January, 1899, we published a brief notice of Dorland's dictionary. We spoke favorably of it, but a less extended description was given than the work deserves. It contains a definition of over 26,000 words, and sixty extensive tables, which include doses of medicines, anatomical terms such as arteries, ducts, canals, etc., and lists of bacteria, fevers, tumors, etc.

The work is of small compass, six by four inches, and is only five-eighths of an inch in thickness. This compactness is reached by using a thin but strong paper. It contains 518 closely printed pages. The letters are small but remarkably plain. The names and headings are in heavy-faced type, which facilitates scanning the page. It is bound in flexible covers, and has a thumb index at the margin of the page.

EDITORIAL COMMENT.

THE TREATMENT OF DIABETES MELLITUS.

The discovery by Claude Bernard of the glycogenic function of the liver apparently threw a flood of light upon the origin of this disease, and has dominated the treatment of the affection for the last quarter of a century, until within a comparatively recent period. The aim has been in all cases of glycosuria to eliminate starches and sugars from the diet and to keep these patients upon a strictly non-diabetic diet. Theoretically, this elimination was supposed to lessen the amount of sugar in the blood and thus lessen the toxemia.

The delightful simplicity of this theory commended it to therapeutists, but a study of a considerable proportion of these cases in which starches and sugars have been almost eliminated from the diet has shown that they did not do nearly as well as those who were allowed a moderate amount of these substances. The further study of these cases has shown that the whole question in diabetes is not apprehended in the elimination of sugar. We have differentiated glycosuria, so-called, from diabetes, recognizing that the former is not nearly so serious a disease as the latter, but that no hard and fast line can be drawn between the two conditions, as there are cases which partake somewhat of the character of glycosuria and others of diabetes, while occasionally these conditions are interchangeable in the same patient. A further study of these cases shows that there are other elements than the mere sugar production which enter into the clinical picture. As a rule, the diabetic has an excessive appetite, with a craving for starches and sugars. This is due to the enormous elimination of sugar and a consequent demand of the system for water and for materials for the manufacture of sugar. Even if his diet is restricted in the matter of starches, he will still consume a larger quantity of food than the average individual. It may well be questioned whether the restriction of diet to protein substances is not beneficial, from the fact that it reduces the whole quantity of food taken. As a result of an ingestion of large quantities of food there is frequently set up in the alimentary tracts of these patients fermentation, with occasional attacks of diarrhea, alternating with constipation, the latter being favored by the enormous watery drain from the kidneys.

The later treatment of diabetes does not aim to cure the affection by eliminating starches and sugars from the diet. Undoubtedly the older writers believed that if all carbohydrates could be eliminated from the diet and kept out of it for a sufficient length of time the patient would recover. The latter conception of the disease regards all this as error and looks upon all confirmed cases of the disorder as largely incurable, but which with medical attention will live for years, leading fairly useful and comfortable lives. The main thing to be avoided by a diabetic is excessive consumption of food, by which the organs of digestion are overtaxed and their function disturbed. The diet should be a mixed one, in which the carbohydrates are considerably reduced, but in which they are not altogether eliminated. The quantity of food taken should be just sufficient to meet the needs of the patient; it should be apportioned carefully for each meal, and under no circumstance should the patient be allowed to overindulge. Careful attention should be directed to the alimentary tract, and fermentation or the results of constipation should be carefully eliminated. In all severe cases, in which there is alimentary disturbance, lavage of both stomach and bowels should be employed.

Medicinally there is comparatively little treatment, but antipyrin combined with bicarbonate of sodium does favorably influence the general condition of the patient, and has some action in diminishing the production of sugar. Iron and arsenic are useful as tonics, and liberal quantities of water should be allowed, which dilutes the urine and washes out the accumulated sugar from the blood.

THE CHICAGO DRAINAGE CANAL.

The discussions which have been held over the sanitary aspects of turning the sewage of Chicago down the Illinois-Michigan canal and the Illinois river, and ultimately into the Mississippi, have shown a wide diversity of opinion in cities along these rivers, notably St. Louis. This city has begun investigating the present condition of the waters, to ascertain the number and variety of disease germs, that comparisons may be made after the canal is opened. This calls forth an editorial in the *Chicago Record:*

"Many persons believe that germs of diseases such as typhoid fever and scarlet fever are to be found in the Chicago river and perhaps in the Chicago water-supply. This is all a mistake. Extensive investigations have failed to reveal any disease germs in the waters of the Illinois-Michigan canal, or in those of the Des Plaines

or Illinois rivers and their tributaries. In fact, it is now accepted that as soon as sewage ferments there appears a colon bacillus which preys upon and destroys all other bacilli. Danger from infection by contagious disease germs in the water exists when by a freshet they are carried into the water-supply before the fermentation takes place. Even the colon bacillus disappears from a stream after the water has flowed at an ordinary rate for a few miles."

This optimistic view of the innocuousness of the enormous mass of sewage that is to be poured by Chicago into the rivers of the State is doubtfully borne out by the authorities. In Massachusetts, where considerable experimental work has been done upon the putrefaction of sewage, stringent laws have been passed to prevent contamination of running streams. There is scarcely a foreign city that has disposed of its sewage by allowing it to pass into the streams that has not spent enormous sums to change the system. Paris, at a cost nearly as great as our drainage canal, built laterally intercepting sewers paralleling the course of the river to turn the sewage from the Seine. Berlin has also been at a great expense to devise a system by which the sewage is led out upon the land, though there is available for this city the river Elbe, in which the colon bacillus would have a fine opportunity to eat up all the other germs before they could get outside of the city limits.

The most painful thing about this whole matter is that Chicago should have spent upwards of thirty millions of dollars in devising a sewage system which has been condemned by every country that pretends to follow advanced sanitary science. The drainage canal, when it was first proposed, was condemned by those who were best posted in sanitary matters.

It is a magnificent ditch, and represents a combination of "boodle politics," ship canal, water power, and incidentally drains away the Chicago sewage. The motives behind its construction were not those of dealing wisely with the sewage disposal of Chicago.

We can be treated to many editorials bolstering up this ill-starred scheme as a great sanitary measure, yet while it is a well known fact that bacilli do destroy each other, and in a mass of fermenting sewage most of the pathogenic germs are destroyed, the conditions which favor this are not those of a running stream. If an opportunity is to be given the colon bacillus and other germs to destroy the pathogenic microbes in the Chicago sewage, it should have been directed to an enormous reservoir and there allowed to ferment, the same as it does now in the south fork of the south branch of the

Chicago river. In this portion of the stream there is practically no current, and an enormous quantity of sewage finds its way there, and the gases given off, polluting the atmosphere, make it unpleasant to breathe, but it is not dangerous. The solids are precipitated, and when the bottom comes too near the top, it is dredged out. If fermentation is to be used in the destruction of sewage, then the more stagnant the water the better.

MILK SUPPLY OF CITIES.

The importance of controlling the milk supply of the cities has been impressed upon the minds of physicians for some time. The average municipal milk inspection is little better than a farce. The regulations consist in prescribing a certain standard of fat content and a specific gravity, the aim seeming to be to limit the amount of water which is added to the milk. The age of the milk, addition of antiseptics, the care with which it is gathered and preserved, are not taken into account. There is no question but there is a close relation between infant mortality and a pure milk supply. Pasteurization has apparently done little in the control of infantile disorders, presumably because it is with difficulty carried out, and also from the fact that it adds nothing to the quality of originally defective milk. Gastrointestinal disorders are chiefly dependent upon a bad food supply and a defective quality of the milk, though it is difficult to say just how much these are reenforced by heat and want of fresh air and unsanitary surroundings. Undoubtedly these latter factors do contribute to a high infantile mortality rate, but it is also to be remembered that the milk supplied our large cities is especially liable to decomposition and change during the hot months. There is little to be apprehended from temperature changes in milk during the winter months. Consequently, while the hygienic surroundings of infants are better, their food supply is also improved. It does not need elaborate statistical tables to show the close relation existing between the quality of the milk supply and the rate of infant mortality.

Even if the original source of the milk supply is good, the manner in which it is kept in a domestic way may result in its early decomposition and make it unfit for infant feeding. The indifference of the general public to a pure milk supply is one of the most serious problems in controlling infant mortality. W. Heath, of Buffalo, has recently issued a pamphlet containing many hints looking to the control of the milk supply. He suggests that the

ordinances governing storage and distribution of milk should include a compulsory system of "tagging" which will give the character, days' age of the milk, and its source, and there should be a strict prohibition of the sale of milk over twenty-four or thirty-six hours old. Where sterilization or other preparation is employed, it should be carried out at the dairy, and the label should contain full information. All disinfectants should be prohibited, and the conditions surrounding the gathering and storing of the milk should be such that they are rendered unnecessary. There should be a strict supervision of the relation of contagious diseases to various milk routes. The street sale of milk and its sale in groceries or markets should be strictly prohibited. He is confident that there would be an enormous reduction in infantile mortality if proper municipal and domestic measures were taken to insure milk being supplied and kept in a hygienic state.

The laws regulating the sale of milk in most large cities are not only sadly defective in their provisions, but also in the manner in which they are enforced.

SHALL BULLETS BE REMOVED?

The older surgeons, before the days of antiseptics, noted that when a bullet passed through a limb there was very much less danger in the wound than when it remained embedded in the part. There were fewer complications and convalescence was more rapid. The explanation of this was thought to lie in the presence of the bullet. Consequently, strenuous efforts were made to remove these missiles; ingenious forceps and complicated probes were employed. In the preantiseptic days this was an almost certain way of infecting the wound, and consequently wounds which contained bullets, and which, according to the best surgical practice of those days, required surgical interference, did badly. It was therefore a not unnatural supposition that the bullet was in some way responsible for these conditions. With the knowledge of the relation which microorganisms bear to infection has come a different conception, namely, that the bullet is devoid of dangerous properties, but that substances carried in with the bullet are responsible for the infection. A later observation is that bullets do practically but little harm, and that wounds sealed immediately or soon after their infliction rarely suppurate. Consequently, the later rule of surgery interdicts all interference with gunshot wounds in which there is no obvious complication calling for immediate interference. In these cases, such as

the penetration of cavities, the opening of important joints, or the severing of arteries, the part should be immediately laid open in the most accessible manner, and without reference to the bullet or its location. Modern surgery condemns any probing or searching for a bullet.

While in the majority of cases a bullet is comparatively harmless, there are not a few in which it causes trouble later on, either suppuration, osteomyelitis, or other disturbances. It is doubtful if any hard and fast rule can be laid down which shall be applicable in all cases, excepting the one that a wound should never be probed. Another factor which has come into notice of late is the aid which is afforded us by the *x*-ray in dealing with foreign bodies. The fluoroscope gives an accurate and ready localization of bullets, and in many cases it is shown that they can be easily and safely removed. Where this can be done with deliberation, and the wound admits of an incision which shall be an operation of election, then it may be wiser to cut down and remove the bullet rather than to take chances of its becoming encysted and causing complications later on. The purpose of the complicated probes of the earlier surgeons was to locate the bullet. By their use wounds were extensively infected, and many lives were lost which would not have been had other means of diagnosis been employed. In the application of the *x*-ray, however, no danger need be apprehended, and an accurate localization of the foreign body can be made. It is evident that this new means of diagnosis will modify, to some extent, the last rule of surgery in the treatment of bullet wounds, that the missile is not to be sought for.

A METHOD OF DISSEMINATING MALARIAL POISON.

A few years ago there was an active discussion as to the manner in which the malarial organism was conveyed. The early writers believed that it was conveyed by the air, and Thomas Watson taught that all malarial districts were much more dangerous at night. Whether this was due to the poison being more condensed or more copiously produced, or to increased susceptibility on the part of the individual, he was unable to say. He speaks of the dangers attending sleep upon the ground in malarial districts, and mentions instances of sailors contracting malaria who had remained on land overnight, while those who slept on board ship and went ashore only in the daytime were exempt from the disease. He says that "malaria loves the ground; it tends downward." Whether this

results from its inherent tendency or from its adhering to particles of moisture suspended in the lower strata of the atmosphere, or from peculiar attraction for the earth's surface, he cannot tell. He thought that it was moved about by the wind, and to live to the windward of a malarious district was much more dangerous than to live to the leeward. He also stated that it was a well known fact that malaria could not pass over even a small surface of water. He thought that the poison also adhered to the trees, especially those that were thick-leaved. He recognized that the cultivation of a soil and settlement of a country tended to diminish this poison.

Nearly all writers believed in the atmospheric dissemination of the poison until a decade ago, since which time there has been a belief that it was disseminated by the drinking-water. Thus Parks states that in 1843 three vessels left Algiers for Marseilles, with 800 soldiers in good health on board. All three vessels arrived at Marseilles the same day. On two of the vessels there were 680 soldiers, and not a man was sick. In the third vessel thirteen of the 120 had died, and ninety-eight of the 107 survivors were suffering from paludal fevers. The two vessels exempt from sickness had been supplied with pure water; the vessel on which sickness occurred had been supplied with water from a marsh. Late investigations seem to point to the possibility of the spread of malarial fever by mosquitoes, and recent studies show some probability of this organism passing part of its existence in the mosquito as a host. If this latter point is definitely proven, that the malarial germ must live in the body of the mosquito during part of its existence, then, of course, the relation of these insects to the spread of malaria is definitely established; but quite careful study of all the peculiar epidemics which have been described in the literature clearly points to the probability of its extension by drinking-water. It is not improbable that the bites of insects, especially the mosquito, are also a means of spreading the disease. There is no inherent improbability in all three of these methods being a means of conveying the infection.

PACHYMENINGITIS.

Pachymeningitis is a condition difficult of diagnosis. The conditions which predispose toward this disorder are alcoholism and chronic exhaustive diseases, especially those of the kidneys and of the blood. Not a few of the disorders which have a comparatively long duration are also complicated by this disease. It is a condition

frequently found post mortem, and it is rarely that a diagnosis is made during life. The reason for this is due to the fact that the symptoms attending it are exceedingly variable and it is so frequently complicated by other disorders. It is quite probable that in the absence of disorder of the vascular wall this condition never takes place. Necessarily the vascular involvement is extensive and includes all parts of the vascular system, so that almost certainly other organs are more or less involved.

The disease is essentially a hemorrhage beneath the dura; it invariably involves the vertex and never encroaches upon the subarachnoid spaces; otherwise the general cerebrospinal axis is not so much involved as it is in the inflammatory effusions which involve the pia mater. Whatever pressure is present is due entirely to the effused blood or fluid beneath the dura, and while it is somewhat diffused it is confined to the vertex. The condition is essentially a hematoma, and sometimes we find a distinct fibrous clot with absorption of the fluid. The clot varies in thickness from an eighth to half an inch, and has well defined edges; such a clot after its removal leaves a distinct impression upon the cortex. In the majority of cases, however, the blood is semifluid, containing a half-clotted mass, some of which is feebly adherent to the under surface of the dura. It is probable that conditions such as these largely occur just before death, but there are other cases in which the clot is more thoroughly organized, and when it is removed post mortem gives an appearance of true thickening of the dura, as if by excessive layers of an inflammatory exudate. These cases give the obscure forms so puzzling in diagnosis. There is headache usually; the successive effusions may lead to a slight impairment of consciousness lasting for a considerable time, and occasionally quite general paralysis. If the pressure is very marked upon one side of the brain, this may simulate thrombosis or cerebral hemorrhage. Slight convulsive seizures are not uncommon, which would suggest epilepsy. In the great majority of cases a diagnosis is impossible, and even if it could be made there is practically no treatment for the affection except that which is directed to the general vascular degeneration.

OPERATIVE TREATMENT OF APPENDICITIS.

In the last edition of Osler's Practice it is stated that all cases of appendicitis are essentially surgical. He condemns the use of cathartics and other medicinal means of treating the disease, and states that even a suspicion of this disorder should look to its reference to

a surgeon. The statistics collected by F. W. McRae for the address on surgery before the American Medical Association were exceedingly interesting and instructive, in view of Osler's authoritative condemnation of the medical treatment of appendicitis. The collected statistics of McRae include 2903 cases published during 1898 and 1899. Eight hundred and seventy-four cases were operated upon during the acute attack as soon as the diagnosis was made, with 170 deaths, a mortality of 19.45 per cent; 896 were treated in a medicinal way without surgical intervention, with 106 deaths, a mortality of 11.83 per cent; and 457 were operated upon during the interval—in these there was only one death. If reliable deductions can be gathered from the foregoing, it rather militates against universal operation. The figures are in the main correct, at least against the advisability of early operation, because if they err in any direction it is in a failure to report the unfavorable cases. So far as these statistics go, they tend to support the views of many, notably Keene of Philadelphia, who does not regard every case of appendicitis as suitable for operation, but thinks that many make a good recovery under medicinal or no treatment. The symptoms of severe appendicitis, such as pain, rigidity, vomiting, and rapid pulse, are sufficiently indicative of danger to furnish definite rules regarding the necessity of operation. It would be interesting if comparative studies could be made of the mortality of severe cases when operated upon and when treated medicinally. The statistics of McRae leave us in no sort of doubt as to the most favorable time to operate for appendicitis, namely, between the attacks. The mortality is reduced at this time almost to the vanishing point, and every recurring case of appendicitis should have the benefit of operation in the interval.

CHANGE IN TYPE OF GENERAL PARALYSIS OF THE INSANE.

Late discussions regarding this disease indicate that there is an opinion on the part of many alienists that the type of general paralysis has changed within the experience of those now practicing. It is claimed that the general type of the disease, characterized by delusions, defect in articulation, and progressive character of the symptoms, with occasional convulsions, is not now seen so often; more or less aberrant forms have taken its place. The syndrome of general paralysis has been broadening, just as has that of tabes and Graves' disease. When a disorder is first recognized, its most characteristic symptom, or at least the one which is considered to be such, is included in its definition. After a time observers note that

other symptoms are associated with these that are quite as constant and nearly as important; thus, in paralysis agitans the most characteristic thing presented by the patient is the tremor, and we doubt if any practitioner would have made a diagnosis of this disease prior to ten years ago in which marked tremor was not present and which was not lessened by voluntary movements. Later writers have come to recognize that in paralysis agitans the tremor is not nearly so constant as is the muscular rigidity, and that in a few cases tremor may be entirely absent, the symptoms consisting of muscular rigidity and general flexion, mask-like character of the features, with the typical slow progressive character of these symptoms. To assume, therefore, that the type of Parkinson's disease has changed is not in any sense true, but to state that we appreciate more clearly the relation of the elementary symptoms entering into this syndrome. The same is true of general paralysis; it is, in its essence, a destructive degeneration of the cerebral cortex, and its symptoms vary according to the portion of the brain which is most affected, and according to the severity of the process. Thus we have cases presenting the original, or what are known as the typical, symptoms, with expansional delusions, and progressive general paresis, and many equally entitled to the term general paralysis, in which there are depressions, atypical delusions, or in which the motor symptoms may be very prominent, without any involvement of the mental faculties, or, again, in which the mental faculties may be almost wholly involved, without any of the motor phenomena.

The "type" is not changed, but we have merely included under this term cases which would not have been so classified by the early writers.

CONTAGION OF CEREBROSPINAL MENINGITIS.

Now and again the periodical medical press contains a polemical reference to the "contagiousness" of cerebrospinal meningitis. Some of the writers believe that it is contagious; others, again, take the ground that the disease is infectious, not recognizing that the essential difference between these two words was based upon the faulty conception of the origin of all epidemic diseases by the older writers. The identification of microorganisms of a definite sort as underlying these various disorders has practically eliminated the necessity of distinguishing between these two conditions. Contagion, in the older sense, meant an infection that was capable of being carried from person to person, while infection commonly referred to a condition pertaining to a locality. The latter term

would apply to a house or a contaminated water-supply. A disease that is still recognized to be in the highest sense contagious is small-pox, though the manner in which this disease is conveyed from one person to another is not understood. Typhoid, which at one time was regarded as contagious, has now come to be looked upon as infectious. The distinction is unimportant, for it is evidently possible to have the typhoid bacillus carried directly from one person to another, though it is certain that this method is very rare at the present time, and before the cause of the disease was recognized and proper care taken as to cleanliness, it was undoubtedly much more frequent.

The same rules apply to cerebrospinal meningitis as to other diseases due to microorganisms. The life history of the germ of this disease outside of the body has not been determined; possibly there is some danger of the transference of the germ directly from person to person, but it is probably not greater than in the case of typhoid. The clinical distribution of cerebrospinal meningitis shows that the germ is to be found in dark and damp places, and that a temperate or even cold temperature favors its growth. In the sense of the older writers it is infectious rather than contagious.

KERNIG'S SIGN IN MENINGITIS AND FRANKEL'S SYMPTOM IN TABES.

Kernig's sign in meningitis is said to be present in from 80 to 91 per cent, and according to Herrick it is present in other affections. Its occasional presence in other disorders still permits of its being of some value in the diagnosis of meningitis. The technique of eliciting this sign is as follows: The patient may be made to sit upon the edge of the bed with the legs hanging down, when extension of the leg is attempted; or the thigh can be brought at right angles to the body, as the patient lies on the side, or preferably on the back, and the leg then extended. The only requirement is that the thigh should be placed at a right angle with the body before the attempt is made to extend the leg.

Frankel's symptom in tabes is elicited by having the patient lie on the back with the head upon a small pillow, when the legs are flexed upon the body; when the thigh is at a right angle or a little beyond this, the leg may be fully extended upon the knees. This must be a voluntary muscular action on the part of the patient, and can only be accomplished by trained athletes or those in whom the muscular tonus is very much lessened, as it is in tabes. Wood

reported two cases of high tabes, in which there was optic atrophy but no loss of the knee-jerks, in which this symptom was not elicited.

A perusal of the description of these two symptoms shows their essential identity. In one, Kernig's sign, which is by no means pathognomonic of meningitis, we have a hypertonicity of the muscles. In the majority of cases this is associated with increase of knee-jerks and is probably present to a greater or less degree in all lesions which involve the cortex, whether meningitic in character or not. Frankel's symptom is exactly the opposite condition, being a hypotonia, and is invariably present in middle and lower cord lesions involving the posterior roots and posterior root zones.

OBLITERATION OF THE BILE-DUCT.

F. T. Walls, in the *Chicago Medical Recorder* for August, 1899, says that under the term "congenital obliteration of the bile-ducts" is described a disease of the new-born in which jaundice appears at birth or shortly afterward, which pursues a pernicious course, ending in death within a few months. The literature contains about seventy-five reported cases, but he thinks the disorder is not so infrequent as this small number would indicate. A case reported by him showed on microscopic examination of the bile-ducts complete obliteration by a homogeneous mass, completely filling the lumen. This mass seemed to fuse into the epithelial lining. The occlusion was confined to that portion of the duct lying within the duodenum. The liver was in a condition of diffuse fatty and necrotic degeneration, with no normal lobules to be seen. Glisson's capsule was more firm and cellular than under normal conditions. Within the lobules small ducts were visible, filled with bile. Thompson's conclusions are quoted, that these cases have their origin in congenital malformation of the bile-ducts, due to defective development. The writer thinks that the conclusions of Thompson are rather assumed than sustained by pathological data. In the greater number of cases the jaundice was only observed some time after birth, and if it had been due to a developmental defect, it would have been noted at the time of birth. In conclusion, the writer says that in the majority of cases congenital obliteration of the bile-duct is a misnomer. The malignant jaundice of children is, in the majority of cases, due to infection of the larger bile passages, which, unless speedily relieved, leads to adhesive or obliterative inflammation with the formation of cysts. Treatment should aim to overcome inflammation and irrita-

tion of the gastrointestinal canal and stimulate intestinal and hepatic activity. If these simple methods fail, the bile-duct should be exposed, opened if possible, and if not an anastomosis established between the intestine and biliary tracts.

THE PRESERVATION OF FRUITS AND FRUIT JUICES BY SACCHARIN.

According to a German pharmaceutical journal it is proposed to use saccharin in the preservation of fruits and fruit juices. It is claimed that there will be a saving of 75 per cent in the preparation of foodstuffs preserved in this way, over what they would cost if cane-sugar was employed. Nothing is said in the article as to the comparative food value of cane-sugar. In speaking of the use of cane-sugar it is referred to as if it were a simple preservative agent, and no mention is made of its nutritive powers, which are of the first rank. Saccharin, of course, has no food value and is merely used as a sweetener and as a preservative. It is stated that saccharin has other desirable qualities and that it is entirely harmless. We find that these "other desirable qualities" are that it is soluble in water; we are left in doubt as to what the remainder may be. Descheemaeker has experimented with saccharin as an intestinal antiseptic in doses of from fifteen to thirty grains about two hours before meals. He claims that this substance is one of the best of our intestinal antiseptics. Under its use patients display a marked decrease of intestinal putrefaction, and among animals it was determined that its administration lessened the bacillus coli commune in the intestines. While these observations would lead us to think that saccharin is a harmless substance, yet there is considerable evidence to the effect that under certain circumstances it may lead to a good deal of disturbance of the intestinal tract, if not positive symptoms. Flugge determined that it caused derangement of all digestive functions, due to the power which it has of arresting the action of the digestive ferments. Especially was it found to be deleterious in diabetics who employed it to sweeten foods in lieu of sugar. The digestive functions are often deranged in diabetics by the small quantity of saccharin employed by them, which rarely amounts to more than six or eight grains in a day.

There is strong evidence that saccharin is by no means a harmless substance, and lessening the cost of preserved fruits by substituting it for sugar is simply lessening their food value without any corresponding advantage.

ABSTRACTS.

MEDICINE.

The Prognosis of Nephritis.—

R. C. Cabot and F. W. White, in the *Boston Medical and Surgical Journal* of August 10, 1899, have a preliminary note on the prognosis of nephritis. The material is taken from the Massachusetts General Hospital for the last twenty years. The course and symptoms of the cases of nephritis and the duration from the time of the onset of both were estimated as accurately as possible. The number of cases which died, or of which they were able to get trace of after leaving the hospital, was 332. In addition, the authors have obtained 191 cases from professional friends. In their study of this material they divide chronic nephritis into two types: (*a*) chronic diffuse nephritis; (*b*) chronic interstitial nephritis. Of the 304 cases in which a diagnosis of chronic nephritis is recorded in the books of the hospital, and which they have been able to follow until death or till the present time, there are only seventeen whose urine and general condition show that they have fully recovered. From the facts in many of these cases it was evident that the patients were rapidly improving at the time the diagnosis was made. In a few cases, on the other hand, the long duration of the symptoms and the character of the urine indicated an undoubted chronic nephritis followed by a genuine recovery. The following two cases are the most remarkable of this series:

Woman, 23 years of age; eight years ago she had symptoms of chronic diffuse nephritis lasting for two and a half years; headache, vomiting, and marked edema of the body, face, and legs; also ascites, which was tapped twice. For the past six years she has been perfectly well, and leading an active life. The urine, examined a year ago and again more recently, was normal, and free from casts and albumin.

The second case was a boy, aged 16, who had chronic nephritis following scarlet fever at the age of eight. This lasted for the next four years, with vomiting, headache, and anasarca. The urine contained one-eighth per cent albumin and many hyaline, granular, and epithelial casts. He had several severe exacerbations. The urine is now perfectly normal, and he has been well for three and a half years.

Nine cases, in which there was a distinct history of lead poisoning, have generally run a comparatively long course. This was true in sixteen cases where syphilis occurred. Some of the shortest cases, to judge simply by the duration of definite symptoms, were associated with arteriosclerosis and uremia, which came on without premonitory symptoms. Such etiological factors as alcohol, infectious diseases, pregnancy, or exposure to cold did not seem to have any special effect in producing the trouble; in the vast majority of the cases the cause was not traceable.

In summarizing their conclusions, the authors say chronic nephritis is not an incurable disease; recovery occurs in rare cases. It may exist for years without causing apparent constitutional disturbance. The average duration in 332 cases of chronic nephritis was nineteen months. Acute nephritis is less common than has been supposed; many cases that were formerly so classified are found to represent exacerbations of chronic nephritis.

The Etiology of Yellow Fever.—

November 8, 1897, Surgeon Eugene Wardin and Past Assistant Surgeon H. D. Geddings were detailed by the Secretary of the Treasury and the President to act on a commission to investigate the causation and treatment of yellow fever in Havana. Their full report, dated July 10, 1899, has been received and printed, and an abstract appears in the *New York Medical Journal* of August 26, 1899. The conclusions are as follows:

1. That the microorganism discovered by Professor Giuseppe Sanarelli, of the University of Bologna, Italy, and by him named "bacillus icteroides," is the cause of yellow fever.

2. That yellow fever is naturally infectious to certain animals, the degree varying with the species; that in some rodents local infection is very quickly followed by blood infection; and that while in dogs and rabbits there is no evidence of this subsequent invasion of the blood, monkeys react to the infection the same as man.

3. That infection takes place by way of the respiratory tract, the primary colonization in this tract giving rise to the earlier manifestations of the disease.

4. That in many cases of the disease, probably a majority, the primary infection, or colonization in the lungs, is followed by a "secondary infection," or a secondary colonization of this organism, in the blood of the patient. This secondary infection may be complicated by the contemporaneous passage of other organisms into the blood, or this complication may arise during the last hours of life.

5. That there is no evidence to support the theory advanced by Professor Sanarelli that this disease is primarily a septicemia, inasmuch as cases do occur in which the bacillus icteroides cannot be found in the blood, or organs in which it might be deposited therefrom.

6. That there exists no causal relation between the bacillus X of Sternberg and this highly infectious disease, and that the bacillus X is frequently found in the intestinal contents of normal animals and of men, as well as in the urine and the bronchial secretion.

7. That, so far as the commission is aware, the bacillus icteroides has never been found in any body other than one infected with yellow fever; and that, whatever may be the cultural similarities between this and other microorganisms, it is characterized by a specificity which is distinctive.

8. That the bacillus icteroides is very susceptible to the influences injurious to bacterial life, and that its ready control by the processes of disinfection, chemical and mechanical, is assured.

9. That the bacillus icteroides produces *in vitro*, as well as *in vita*, a toxin of marked potency; from our present knowledge there exists a possibility of the ultimate production of a more powerful antiserum than that of Professor Sanarelli.

H. Doty, in the *Medical Record* of August 26, 1899, describes in detail a case of yellow fever which was treated at the Swinburn Island Hospital. Three injections of serum, two of 25 cubic centimeters and one of 50 cubic centimeters, were given, one on the evening of July 6 and two on the morning of July 7, the temperature at the time of the last injection being 102.2°. After July 7 the patient was in a comfortable condition, and his mind was perfectly clear. Beside the serum treatment, no medicinal agents were employed, except that during convalescence a tonic containing strychnine was given. From ten to twelve ounces of warm salt water was occasionally introduced into the rectum to assist the function of the kidneys. While the writer is not inclined to overlook the importance of the good nursing to which this case was subjected, yet the administration of serum was followed by a marked decline in the disease. Thus the temperature, which was 103.2° on the evening when the first injection was given, had in one hour fallen to 102.6°. This was followed by a still more rapid decline during the fourth and fifth days after giving the injections. So far as the temperature record goes convalescence was apparently established within one week after the injections were given, with the exception that on the eleventh day of the disease, or the ninth after

the injections, the temperature went up to 100°, after which it remained normal, and there was a favorable convalescence. The disease seemed to be severe, and an apparently unfavorable outcome might easily have been expected.

Tuberculin as a Diagnostic Agent in Tuberculosis.—

G. D. Head, in the *St. Paul Medical Journal* for September, 1899, says that tuberculosis is a curable affection in only a small percentage of the cases in which an accurate diagnosis can be made from the physical signs. After a certain diagnosis is reached, then the opportunity for relief rapidly diminishes. A reliable method of diagnosis is to be sought, and the belief of many physicians that it is to be found in tuberculin has led him to study the subject and collect the literature. He has collated to date 418 cases, 54 per cent of which reacted to the test. Of 136 cases reacting, 61 per cent were found to be certainly tuberculous. Of eighty-three cases certainly tuberculous, five per cent did not react to the tuberculin, and this failure to react in at least one case was due either to a small dose or the establishment of a tolerance on the part of the patient. The tubercular cases which failed to react were, so far as the writer could ascertain, far advanced in the disease. As for the experiment on healthy individuals, one reacted to the tuberculin. In sixty-four cases of disease thought to be non-tuberculous, 18 per cent reacted. From a study of these cases it seems most probable that no pathological state by itself reacts to tuberculin, except that caused by the tubercle bacillus. Tuberculin caused a reaction in 92 per cent of cases of pulmonary tuberculosis. A positive reaction was found in 71 per cent of the cases of enlarged cervical glands, in 88 per cent of the cases of acute pleurisy, in 100 per cent of the cases of chronic pleurisy, in 91 per cent of the cases of tuberculosis of the joints, in 100 per cent of the cases of tubercular peritonitis, in 100 per cent of the cases of Addison's disease, and in 100 per cent of the cases of lupus.

The Bacillus Typhosus in the Gall-bladder Eighteen Years After an Attack of Typhoid Fever.—

G. L. Hunner, in the *Johns Hopkins Hospital Bulletin*, August-September, 1899, describes the case of a German woman, aged 54, who was admitted to the Johns Hopkins Hospital in February of this year, with a large abdominal tumor. She gave a history of an attack of "remittent fever," from which she suffered eighteen years before. She was in bed two weeks with the fever, and at that time

there was typhoid fever in the neighborhood. Three and a half years before coming under observation there was a beginning enlargement of the abdomen. This began suddenly as a severe pain in the right side, radiating down into the right inguinal region. The pain was intermittent, lasting about half an hour, and left the patient with abdominal tenderness and a good deal of nausea. She had no vomiting and no jaundice, but suffered from occasional attacks of diarrhea. Eighteen months before admission to the hospital the attacks increased in severity, and of late she had been confined to her bed and had lost weight and strength.

Physical examination revealed the presence of a large cyst starting from the left ovarian region. The right ovary was represented by a hard movable mass. An operation was performed, the ovarian cyst removed, numerous adhesions separated, and an adherent appendix was amputated. Convalescence was uninterrupted until the fourteenth day, when there was nausea and vomiting, and later pain in the epigastrium. The pulse and temperature increased, the leucocyte count was twenty-nine thousand, and there was a visible tumor, tender to touch and dull on percussion, in the right hypochondrium. An incision revealed a distended gall-bladder, which was incised and permanently drained. The patient made an uninterrupted recovery, the bile passing through the fistula for about a month, after which it closed spontaneously. Smear cultures made from the exudate of the peritoneum were found to be sterile. Cultures made from the fluid found within the gall-bladder revealed the presence of a number of bacilli resembling in all cultural characteristics the bacillus typhosus. The patient's blood gave a positive Widal reaction.

Accidental Heart Murmurs.—

George W. Webster, in the *Journal of the American Medical Association* of July 22, 1899, discusses the causes and differential diagnosis of accidental heart murmurs. These may occur when there is neither anemia nor fever, and are present in certain forms of disease. Accentuation of the pulmonic second sounds may occur in these murmurs, which may be diastolic in rhythm. The term "accidental" should be employed to designate all those cardiac murmurs which cannot, after careful examination, be clearly demonstrated to belong to the organic class. The advantage of the term "accidental," in which word the author includes what are commonly called functional heart murmurs, has this in its favor: it commits us to no theory of cause, indicates no pathological condition, avoids

a discussion of the question as to whether disturbances occur without pathological change, and, above all, it erects no barrier in the way of progress.

As to the production of these murmurs, he says that we are by no means acquainted with all the physical conditions that give rise to cardiac or vascular murmurs. No single theory can be adopted to reasonably account for all accidental murmurs. There may be a relative insufficiency of the aortic, mitral, or tricuspid valves, due to degeneration, fatigue, or the effects of toxic agents. These murmurs may not vary in the essential characteristics, pitch, intensity, or area of audibility, from regurgitation due to organic disease at the same orifice. In many cases, especially the apex systolic murmurs or in those heard over the body of the heart, a correct diagnosis cannot be made, except by waiting the results of treatment.

The So-called Typhoid Pneumonia.—

F. R. Smith, in the *Maryland Medical Journal* of September 2, 1899, says three separate disease groups are included under this term: (1) Pneumonias running a typhoid course, with outspoken typhoid symptoms, in which the infection of the organism is in no way due to the typhoid bacillus; (2) the combination of a true typhoid fever with a genuine lobar pneumonia induced by the pneumococcus; (3) cases of typhoid fever in which the prominent symptoms of inflammation of the lungs are possibly to be ascribed to the typhoid bacillus, or to those bacilli in conjunction with some other infection.

In his conclusions the author states that the majority of pneumonias occurring in the course of typhoid are not caused by Eberth's bacillus, but by the pneumococcus. Asthenic pneumonias with so-called typhoidal symptoms have nothing in common with typhoid fever. We ought, therefore, to discard the term typhoid pneumonia as inaccurate. In rare cases in which it can be proved beyond doubt that the pneumonic process as well as the general typhoid infection are both due to the bacillus of Eberth, we can still use the term pneumotyphoid, but when employed it should be subject to these strict limitations.

Gastric Ulcer.—

R. B. Grenough and E. P. Joslin (*American Journal of the Medical Sciences*, August, 1899) have studied 187 cases of gastric ulcer treated at the Massachusetts General Hospital during the past ten years. Their conclusions are that this disease is five times as com-

mon in women as in men. The average age in men when attacked by this disease is 37 years, and in women 27. In 81 per cent hemorrhage was present, and it caused death in 17 per cent of the male patients and 1.27 per cent of the female patients. No woman under 37 died of hemorrhage with gastric ulcer in this list. (In view of this discrepancy in the percentage of males who died from hemorrhage, it is well to note that the total number of male cases in this series was only thirty.) The blood in these cases is that of a chlorotic type of anemia. Perforation occurred in 3.2 per cent of the cases, and none of these patients left the hospital alive. Of 114 patients, 80 per cent were discharged cured or relieved, but at the end of an average period of five years only 40 per cent remained well. The mortality was 20 per cent; among the males it was 30 per cent, and with the females it was 9 per cent. The writers think that the excessive mortality among men, its occurrence in life a decade later than in women, and the absence of fatal cases of hemorrhage in females, point to a difference in the ulcer in the two sexes. The mortality of eight per cent, and the failure of medical treatment to effect a lasting cure in 60 per cent, indicate the need of surgical intervention in other than emergency cases of the disease.

Hodgkin's Disease.—

H. E. Wood, in the *New York Medical Journal* of August 19, 1899, reviews an experience in the treatment of four cases of Hodgkin's disease. He defines the disorder as a progressive proliferation of the lymph glands, with frequent secondary lymphoid growths in the spleen and liver, and progressive anemia. The etiology of the affection is still in doubt. The onset of the disease is usually insidious, and the attention of the patient is first drawn to his condition by the glandular enlargement. Anemia, though present to a considerable degree in all cases, is usually first noticed in cases well under way. It is rarely excessive, the blood count showing from 2,500,000 to 4,000,000 red cells. The subjective symptoms are dizziness, headache, shortness of breath on exertion, noise in the ears, nosebleed, muscular weakness, and edema of the feet. Fever is present in all cases during some stage of the disease; it is more marked in those cases which pursue a rapid course. The diagnosis is difficult in the early stages, and it may be impossible to distinguish the disease from tubercular infiltration of the lymph glands. Tubercular disease in some other part of the body may exist with true cases of Hodgkin's disease. Recovery is exceptional, if it ever occurs. The average duration of the disease is from one to three years, though

periods of latency may occur which will carry the disease far beyond these limits. No reliance can be placed upon therapeutics; the best drug is arsenic, which pushed to the point of tolerance has some effect upon the course of the disease.

The Cold Wave of February, 1899.—

Dr. Guy Hinsdale, before the American Climatological Association (*Boston Medical and Surgical Journal*, September, 1899), traced the meteorological conditions leading to this cold wave, and showed the effect on the community in the loss of life. One hundred and four persons perished between January 29 and February 4. Twenty-four of these died in Colorado by freezing to death and by avalanche; in Texas fifteen; in Pennsylvania eleven; and in New York ten. The hardships from scant food and fuel supplies were more wide-spread than in any other cold wave of which we have record. New minimum temperatures were established in different places: Washington, minus fifteen degrees; Baltimore, minus seven degrees; Philadelphia, minus six degrees. The snowfall began February 11, at 9 P.M., and continued for three days, during which time 18.60 inches fell. The wind was from the northeast and blew at times at the rate of sixty miles an hour. The lowest barometer was 29.92 inches. The estimated financial loss in Philadelphia was $2,500,000, and in the country at large about $20,000,000. Food rose in price, and there was a shortage in meat, coal, milk, fresh vegetables, oysters, fish, and flour. Ice was noted passing New Orleans on the 17th of February, flowing on into the Gulf of Mexico, an event which had never been witnessed before. Ice an inch thick formed at the mouth of the Mississippi river, and the temperature fell to ten degrees. There was a fall of snow at Jacksonville, Florida.

A Study of the First Six Months' Mortality of 1899 in Chicago.—

In the *Monthly Bulletin of the Department of Health*, city of Chicago, June, 1899, is a study of the first six months' mortality of 1899. The statistics show that during the first four months of the current year there was a great disparity between the so-called air-borne and water-borne diseases. This attracted the attention of the department, and it led to a study of the statistics of these conditions. The first four months were characterized by a light precipitation with a correspondingly improved quality of the water-supply on the one hand, and a dust and miasma polluted atmosphere on the other. The Chicago water-supply is contaminated by the sewage,

and a heavy rainfall means flushing of the sewers, which empty into the lake; in case the precipitation is considerable, the turn of the current of the river is lakeward, and the water-supply becomes more or less contaminated. Every such precipitation is followed by an increase in the water-borne diseases. Commonly, from eighteen to twenty-one days elapse from the time of the precipitation until the effects are felt.

The prevalence of typhoid in Chicago is more directly influenced by precipitation than any other condition. A rainfall of more than three-fourths of an inch in twenty-four hours may turn the course of the river toward the lake. The commencing increase in typhoid fever begins in about three weeks and culminates in from five to seven weeks.

An Epidemic of Pneumonia Due to Food Poisoning.—

Dr. G. V. Poore, in the *Clinical Journal* of August 9, 1899, alludes to an epidemic which occurred at Middlesborough, England, in 1888, and which was studied by a Dr. Ballard. The idea was generally prevalent throughout Middlesborough that the prevailing epidemic of pneumonia largely attacked those who had eaten of a particular form of bacon. Dr. Ballard made a collection of all the cases of pneumonia occurring in that epidemic, and found that all had partaken of a particular brand of this meat. The working men were in the habit of taking their meat very much underdone. The suspected bacon in question was warmed before the fire—it could scarcely be called cooked—and then eaten. Dr. Ballard investigated the source of this bacon and found that it was made from a certain variety of pork, by a process of injection. In the room where it had been made there was an open sewer with a grating. Some of the fat from this grating was examined by Dr. Klein, of London, who found the ordinary diplococcus of pneumonia, which produced an epidemic among rabbits and guinea-pigs. Poore, in referring to this epidemic, says that of late the discussion of food as a possible source of pneumonic infection has been dropped. Nevertheless, he says that Ballard's observations showed that pneumonia did occur in numerous succession among the pork eaters, and that bacilli were found in the pork and in the place where it had been prepared.

Fibroid Lung from Exposure to Dust.—

W. W. Betts, before the Rocky Mountain Interstate Medical Association (*Journal of the American Medical Association*, Aug. 12, 1899), said that he has made a study of the exceedingly fatal disease

caused by working in the dust of ore refining establishments. In the treatment of ore it is reduced to a very fine powder, which seems to be very fatal in its effects. The writer states that of a large number of men who had been exposed to this dust for a period of seven to nine months prior to January, 1898, all were now dead. One case endured an exposure of eighteen months before becoming affected, and is still living. In contrast with this, one was affected within three months and died before the end of ten months. In fourteen tabulated cases, the men having been from twenty-three to forty-three years of age, and all healthy, when they were first employed, the average time that they were able to engage in the work was thirteen months, and the average time lived after leaving the work was ten months. Two autopsies are reported: in one the pericardium was greatly diseased; in both the lungs were firm and the air-cells nearly obliterated by a great increase of fibrous tissue. Chemical analysis showed silica present to the extent of 2.8 per cent in the lung tissue and 3.8 per cent in the bronchial glands.

The Hanging-drop Method of Studying Bacteria.—

C. C. Hunt, in the *Illinois Medical Journal* for September, 1899, says that the importance of the Widal test is bringing the hanging-drop method into increased use. The chief difficulty is that of focusing the microscope in a medium so transparent as a bouillon culture of the typhoid bacillus. The focus is so difficult that often the cover-glass is broken, with sometimes a displacement or injury to the lens. To obviate this he makes a few parallel strokes with a platinum rod at right angles to each other with some culture medium. A film is then fixed, dried, and stained, and again decolorized. The hanging drop is placed in the center of one of these squares, and the focusing is usually done at the margin. The stain does not interfere with the view of the organisms in the drop, since they can be seen clearly in the open spaces between the lines. On the contrary, the contrast of color rather adds to the clearness of definition. This simple expedient saves time and does away with much annoyance. The same cover-glass may be used many times if it is prepared with one of the best grades of the basic aniline dyes.

Variation of Glycosuria in Diabetes.—

F. Frederick Crouse, Jr., in the *Albany Medical Annals* for August, 1899, says that nearly all cases of diabetes show fluctuations in the twenty-four hours. In the mild cases these show a certain regularity; there is an increase in the forenoon and again in

the evening. Generally diabetics cannot assimilate the carbohydrates which are taken for breakfast on an empty stomach, but they may assimilate these substances if taken for luncheon or dinner. He reports two cases; in one the patient could not assimilate fifty grammes of bread at breakfast, but no sugar appeared in the urine after the ingestion of 200 grammes taken later in the day. Another patient had himself observed that he could not assimilate carbohydrates taken at breakfast; in this case three grammes of bread taken at the morning meal would cause sugar to reappear in the urine. The same amount of carbohydrate added to the other meals was assimilated, the urine remained free from sugar, and the patient gained in weight. The author says that there is prognostic value in the fluctuations which occur in the elimination of sugar; if these are regular, they indicate a mild case; if they are not marked and are irregular, the case is relatively severe.

Hygiene of the Skin.—

L. D. Judd, in the *Boston Medical and Surgical Journal* of August 3, 1899, says that to teach people how to live and avoid disease and suffering is a far nobler, though much more difficult, task than is the removal of diseased conditions after they have been incurred. The proper care of the skin is only secondary to the proper treatment of the stomach, and it is the duty of the profession to instruct the laity in these things. Too frequent bathing, especially by the Russian or Turkish methods, as well as the indiscriminate use of soaps, oils, and fats, are quite as objectionable as the failure to keep the skin clean. The writer says that the most serious breach of hygienic laws in the care of the skin is the use of improper underwear. He condemns wool in all forms, as tending to retain moisture next to the skin, and thinks that the ideal material for underwear is linen. It should be loosely woven. It is a material which readily takes up moisture, and dries the skin and itself rapidly, in this way keeping the skin dry, as well as the air and clothing surrounding it. Wool is the proper material for outer garments, as it is more impervious to moisture of the atmosphere and affords greater protection to sudden changes in the temperature.

Identification of the Tubercle Bacillus in Milk.—

L. Rabinowitsch and W. Kempner (*Zeitschrift für Hygiene und Infectiones Krankheiten*, 1899, p. 137) have directed attention to the study of the identification of the tubercle bacillus in milk. More especially have they studied as to whether these organisms are found

in the milk in cases in which there is no local lesion of the udder; also if they are found in the milk in cattle in which the disease is latent and not revealed by injections of tuberculin. For this purpose the milk of fifteen cows was taken, centrifuged, and the resulting organisms examined by staining methods and by injecting into the abdominal cavity of rabbits. In eleven cases bacilli were found that gave the color-staining reactions of the bacillus tuberculosis, but only two of these were positively identified as true types, the others belonging to the various forms of pseudotubercle bacilli. The result of other observations shows that the milk of tuberculous cattle in which the disease is latent, and in which there are no local lesions, contains tubercle bacilli in 71 per cent of the cases. From this they conclude that the use of tuberculin should be obligatory, and if there is the slightest reaction the animal should be classed among the suspects.

A Convenient Method of Cleaning the Percentage Tubes of the Hematokrit.—

C. S. Rosenburg, in the *Journal of Applied Microscopy* for August, 1899, says in using the percentage tubes of the hematokrit it is absolutely necessary that they be perfectly clean. Since they have so small a bore it is evident that they cannot be cleaned by any ordinary process. In the laboratories of Perdue University the method used is as follows: Immediately after making a count the tubes are placed in a dish of water for a few minutes; this serves to loosen up what blood may be in them. A horsehair loop, containing a thread, is then run through the lumen of the tubes. It has been found convenient to use this horsehair loop, as it is stiff enough and of sufficient strength to carry the thread through. A needle might be used, but it is easier and takes less time to slip the thread through this loop than to thread the needle. After the tubes have been cleaned by the thread, it is necessary to dry them. In drying, a small bicycle pump, with a piece of rubber tubing fitted over the nipple to hold the tubes, is employed. In this way the tubes can be dried without any moisture getting into them. Both tubes can be cleaned and dried in five minutes or less.

Comparative Chest Measurements.—

H. M. Lee (*Medical Review*, July 29, 1899) has compared the average chest measurements of 800 men examined by him for admission into the United States volunteer service. The men were between the ages of eighteen and fifty years, the average age being

twenty-six. They were all healthy men and were enlisted in the government service, or at least passed the examination. They were from all walks in life, but the majority were accustomed to hard exercise in the open air and to doing heavy muscular work. The average measurement at complete expiration was twenty-nine and two-fifths inches, and the average measurement at complete inspiration was thirty-three and one-fifth inches. The average expansion was three and four-fifth inches. Expansion was not materially affected by age, as the older men examined had an average expansion of over three inches. The greatest variance was in the young men, between eighteen and twenty-four years of age, the lowest and the greatest expansion being found in these men. The smallest expansion recorded was two inches, and the largest six inches.

Malignity of Malarial Fevers.—

J. M. Espada, in the *Journal D'Hygiene* of June 22, 1899, writes of the severity of paludal infection in Cuba. There is quite a general belief that malarial fevers are by no means severe and are easily treated. That this is true of the temperate regions of the United States no one will deny, and this undoubtedly encourages a belief that malaria is an easily managed affection and one that is infrequently fatal. Espada says that yellow fever is a disease which deals lightly with the natives of Cuba. Its fatality is about 20 or 25 per cent when it attacks foreigners, but by no means all unacclimated are liable to the infection, and it is not subject to relapse. On the contrary, malaria attacks all of the population. It continues for an indefinite time, aggravates all associated disorders, and one attack predisposes to another. The victim of paludism has his powers of resistance lowered, and while the immediate mortality is comparatively small, yet to it must be added a large number of deaths which are to be attributed to malarial cachexia and intercurrent complications.

Dust as a Cause of Tuberculosis.—

Girsdansky, in the *New York Medical Journal* of September 9, 1899, adheres to the view that sputum is harmless until it dries, is pulverized, and disseminated into the air; therefore everything which tends to produce dust aids in the spread of tuberculosis. The greatest disseminator of dust and disease germs is that ancient domestic scepter, the household broom. The broom, he says, is far from serving a hygienic purpose; it contributes not a little to the main-

tenance of organic disease germs in the atmosphere, and in this way is an important factor in the spread of tuberculosis, and possibly other infectious diseases. The carpet is likewise an unhygienic article, serving as a fine breeding ground for vegetable parasites, and necessitating the use of the broom, with its attendant evils. The only proper way of cleaning the floors and streets of our cities is by the free use of water, and the floors and floor covering of our homes should be so constructed as to facilitate the free use of water in the form of a shower, or a mop.

A Case for Testing the Sense of Taste.—

N. T. Beers, in the *New York Medical Journal* of September 9, 1899, describes a small case containing four half-ounce bottles, with ground glass extension stoppers, for testing the sense of taste. The solutions which he recommends are as follows:

Bitter.—Quinine sulphate, a quarter of a grain to an ounce of distilled water (about 0.05 per cent).

Sweet.—Saccharin, one tenth of a grain to an ounce of distilled water (about 0.02 per cent).

Sour.—Phosphoric acid (pure), three minims to an ounce of distilled water (about 0.66 per cent).

Salty.—Sodium chloride, five grains to an ounce of distilled water (about one per cent).

SURGERY.

The Treatment of Intussusception.—

Frederick Eve, in the *Clinical Journal* of August 23, 1899, has a clinical lecture upon intussusception, especially with regard to treatment. The mortality of these cases treated by the expectant method is, according to Eve, 98.8 per cent. He quotes Power as recommending that the patient be chloroformed and the large intestine filled with salt solution under a hydrostatic pressure of not more than three feet in a child. Power claims that the earlier this method is adopted after the presence of symptoms the better, but it should not be employed where the symptoms are very acute. It is contraindicated in those cases with subnormal temperatures that lead the surgeon to believe that the intestine is gangrenous. If, after irrigation has been twice used, there has been no reduction, then the abdomen should be opened.

Eve questions whether injection and inflation are of sufficient

utility to warrant the employment of a method that has undoubted disadvantages. He quotes Heaton as stating that of a series of 104 cases, sixty-three were inflated, with fifteen successes. These results appeared to be favorable. The statistics of the London Hospital, in the last decade, show that fifty-five cases out of 124 were injected or inflated. Of these, six died without further procedure; and of those remaining, eighteen required operation because the intussusception was irreducible by this method, or because reduction was incomplete and intussusception recurred. Fourteen of the eighteen cases were capable of reduction by operation, although injection or inflation had failed to reduce them, and four only were irreducible. Not a single case, therefore, was cured by inflation or injection.

Of Eve's series of eleven cases, six were treated by injection or inflation, four with little or no result. In the other two reduction apparently took place, but was shown afterward to be incomplete, for the displacement recurred in twenty-four hours, and laparotomy was performed with a fatal result in both. The apparent difference in favor of operation over injection and inflation is slight in the figures of the London Hospital, but the difference in favor of operation is really greater, as injection was tried in cases of recent onset, while those operated upon were all of long duration and well-nigh hopeless.

The general disadvantage of injection and inflation is that it brings about partial reduction, apparently at the time complete, thus causing the postponement of an operation that depends for its success upon an early performance. The dangers of injection are by no means confined to incomplete reduction, but rupture of the bowel may actually take place, or there may be collapse during the injection. Eve's experiments upon the bodies of infants showed that the ileocæcal valve was absolutely competent in two instances. In three, a small amount of water trickled through the valve, but with a hydrostatic pressure of four feet it was not sufficient to reduce an intussusception artificially produced. With air the results were slightly better; it passed freely through the valve in three cases and caused a pressure in the ileum equal to a column of water of eighteen inches. In one case the valve was perfectly competent to air. These facts demonstrated that in more than half the cases in young children the valve is practically competent to air and water. More than 38 per cent of all cases of intussusception are intestinal or ileocolic, and therefore more than half of these would be unaffected by inflation or injection. In the majority of cases we

cannot tell what portion of the bowel is prolapsed. He therefore concludes that injection and inflation are inefficient and actually dangerous.

It is generally safe to assume that cases of two days or less in duration, with very rare exceptions, are reducible by operation. Eve's results are eleven cases operated, with six recoveries. Apart from the acuteness and duration of the displacements, the main elements in securing success in very young children were the least possible manipulation of the intestine and rapidity in operation. The displaced intestine should not be removed from the abdomen if it can be avoided. The incisions should usually be made in the right linea semilunaris, opposite to or a little below the umbilicus. Reduction should be effected by squeezing the swelling at its distal end and not by dragging on the upper layer.

Surgical Treatment of Fibromyoma.—

Schauta, before the International Congress of Gynecology and Obstetrics, at the third session in Amsterdam (*Annals of Gynecology and Pediatry*, August, 1899), gave the following conclusions based on 424 cases of operative treatment of uterine myoma: (1) Operative treatment for fibroid tumors is not legitimate, except when they are the cause of troubles which cannot be removed by other means. (2) Vaginal total extirpation is the safest and, in the long run, most successful operation. It should be performed in all cases when the tumor does not extend above the level of the umbilicus, and when it can be easily drawn into the small pelvis. (3) For large, not easily moved, tumors, wholly or partially intraligamentary, abdominal total extirpation should have the preference. (4) Supravaginal amputation with intraperitoneal treatment of the stump should be set aside in favor of abdominal total extirpation, although the immediate results of the former are sometimes more favorable. It has been proved that there are more chances for absolute recovery when no part of the cervix remains. In emergency cases, supravaginal amputation with extraperitoneal treatment of the stump may be employed, as it affords facility for speedy and absolute extraperitoneal execution, an advantage not to be underrated. Among these would be included cases of extreme anemia, asphyxia, weakness of the heart, and suppuration or necrosis of the tumor. (5) Vaginal enucleation of broad-based, submucous tumors, either by way of the dilated cervix or by the vaginal fornix, after anterior or posterior colpotomy, with or without opening of the peritoneum, should be resorted to only in cases where there are special indications. Myo-

mata being generally multiple, it would not be likely that the operation would afford durable results, and therefore cannot be considered as less dangerous than the radical operation, with removal of the uterus. (7) Curettage should be looked upon as an uncertain mode of treatment not free from danger and limited only to rare cases of beginning myomatous development. (8) Castration should rarely be done, as it does not compare with radical operations. In quite exceptional cases, when it is not possible to perform supravaginal amputation with extraperitoneal amputation of the stump, it may now and then be resorted to. (9) The methodical use of forcipressure in controlling hemorrhage has no advantage over ligatures, except in so far as they facilitate a speedy operation. In cases of emergency or danger, their use is justified. (10) The value of drainage of the supravaginal wound in avoiding sepsis and exudation, in abdominal as well as total extirpation, should be always kept in mind. (11) The question of removal of the ovaries in vaginal or abdominal total uterine extirpation is not yet decided. Climacteric symptoms have been observed either way. If the ovaries are removed, these symptoms appear immediately; if left behind, after weeks and sometimes months.

Ethyl Bromide as an Anesthetic in Minor Surgery.—

J. E. Kempter, in the *Maryland Medical Journal* of September 2, 1899, says that his personal experience in the use of this substance is not very great, yet he thinks it justifies the conclusion that in short and painful operations ethyl bromide should occupy a more prominent position in surgery than it now holds. It is not more generally used because we are misinformed regarding its dangers. Authorities who refer to this anesthetic in standard textbooks base their views of its dangers upon two fatal cases which have become classic in the literature of ethyl bromide anesthesia.

The contraindication for ethyl bromide is the necessity for a prolonged anesthesia. In the two fatal cases referred to, the drug had been given for a considerable time. Ethyl bromide is dangerous when used like chloroform, with a free admixture of atmospheric air, and where the substance is not perfectly pure. Its advantages are a rapid anesthesia, and that it is well adapted to children. When the substance is chemically pure it is not contraindicated in heart lesions.

The plan of J. J. Chisholm, who has administered it three thousand times without serious complications, and which is recommended by the writer, is to use a crash towel folded into an air-tight

cone made of paper, the base of the cone being sufficiently wide to cover both nose and mouth. The dose required to produce anesthesia is then poured into the inhaler. This ranges from two to two and one-half drachms in children, and from two to three drachms in adults. The patient's nose and mouth are then covered by the cone, and he is instructed to breathe deeply. Having once applied the inhaler, it is held down firmly, removing it from the face only when full anesthesia has been induced. The patient has a stifling sensation, but there need be no fear of causing asphyxia. The cone must not be removed, for in no other way can rapid and safe anesthesia be obtained. The time required depends upon the number and depth of the respirations; generally one minute is sufficient. The anesthesia lasts from one and one-half to two minutes. In most cases neither the pulse nor the heart-beats are affected by the drug. The patient wakens suddenly as if from a natural sleep, without loss of coordination and with a perfectly clear brain. Disturbance of respiration is a very unusual complication.

The death-rates of the various anesthetics, as reported by the Berlin Surgical College, from 1890 to 1897 were as follows: Chloroform, 2023 cases with one death; ether, 5090 cases with one death; ethyl bromide, 5228 cases with one death.

The necessity of applying the inhaler in the manner described is due to the volatile qualities of the drug and its liability to decomposition. A fresh preparation should always be used, as exposure to light and air decomposes ethyl bromide with the formation of toxic substances.

Hernia After Operation for Appendicitis.—

F. B. Herrington gives an account in the *Boston Medical and Surgical Journal* of August 3, 1899, of 236 cases which were examined some time after operation. All of the cases occurred in the service of the Massachusetts General Hospital. No attempt was made to compare the results of the various operators, as the method of operation in the period covered by the last ten years varied from time to time. Many of the cases which reported themselves as perfectly well had marked general bulging of the abdominal wall on the side operated upon. Some had protrusions of the wound, and some had hernias of which they were not aware, as they caused no trouble. Intermuscular spaces could be detected in 28 per cent of those with tightly closed wounds. These were present in 83 per cent of those cases with wounds tightly closed, and 87 per cent of those which were left open. These intermuscular spaces result from

separation of the muscles which were not brought into apposition by sutures. Drainage by gauze or by other means favors this condition, as do also transverse incisions of the muscles.

The writer concludes his study with the statement that hernia and bulging occur frequently after operations for appendicitis. They are very common when drainage has been used. The muscular and tendinous fibers should not be cut in any appendix operations if it can be avoided. As little drainage as safety will permit should be used. When drainage is necessary, as much of the wound should be closed as possible with sutures, and the drainage removed at the earliest moment consistent with safety. If the wound can be closed immediately, the tissues should be restored to their normal position by sutures. Stout belts and trusses are of little value in the after-treatment of these cases, and may even do harm. The abdominal muscles, from the earliest period possible after the operation, should be developed with proper exercises. If hernia or marked bulging occurs, an operation for radical cure is safe and satisfactory.

Epileptiform Convulsions During Complete Anesthesia.—

Mr. Low, at the meeting of the Society of Anesthetists (*Clinical Journal*, July 26, 1899), described a case of epileptiform convulsions during complete anesthesia, in a patient who had no previous history of epilepsy. The case was a woman 45 years of age, seriously ill with acute appendicitis. The operation was delayed, owing to the general bad condition of the patient. Pus formed, which was evacuated by a ventral incision, but no radical operation was performed. Anesthesia was begun with gas, which was followed by ether, and later by ether and oxygen. The anesthesia was normal for half an hour, when suddenly the pupils became widely dilated and the breathing exceedingly deep. This was followed by twitching of the eyelids and an epileptic fit, the convulsions beginning in the left thumb and spreading up the left arm, which, together with the left leg, was drawn to the opposite side. During the remainder of the operation she had a series of slighter fits, which at the end of a quarter of an hour after the completion of the operation passed into slight attacks, with simple twitchings of the muscles of the face, and widely dilated pupils. She did not emerge from the anesthesia for three-quarters of an hour. Septic foci in the brain were feared, but the subsequent history of the patient showed that none were present, nor was there any recurrence of the attacks after she fully emerged from the anesthetic. The reporter states that he had observed a somewhat similar case, but that patient was one who was a confirmed epileptic.

Treatment of Fractures by Massage.—

W. S. Caldwell, in the *Railway Surgeon* of September 5, 1899, says that while other surgeons have advised the treatment of certain fractures without the use of splints, Championniere has so extended this field of practice and so systematized it as to put the whole subject upon a scientific basis. A letter to Dr. Caldwell from Dr. Championniere states that in America the profession is even more antagonistic toward the plan of treating fractures by massage than is that of France. In his treatment of fractures without splints, massage is an important factor. The word massage is likely to be misunderstood, especially by those who are accustomed to seeing it performed in a rough manner. In beginning massage of a fracture very little pressure must be brought to bear upon the parts, and the massage must be soft, progressive, and painless. The joint movements which he advises are to be made in a methodical manner, which is entirely different from abandoning the patient to his own resources. Championniere has treated fractures in this way for over fifteen years. The chief difficulty encountered in France was to get the public to accept a form of treatment that does away with a lot of mechanical appliances to which they have become accustomed. Fixation apparatus is not wholly abandoned, as there are cases in which the tendency to displacement is so great that the temporary use of splints is necessary, in order to eliminate the motion of the parts.

Fractures of the clavicle, which have become very frequent in Paris since the use of the bicycle, are treated successfully by massage. It is only where the displacement of the fragments is very great that any retentive apparatus is applied. In those cases where a patient is anxious for a recovery without any deformity, the seat of the fracture is laid open and the ends of the bone wired.

A Non-tubercular Form of Hip-joint Disease in Children and Young Persons.—

Edmund Owen, in the *Medico-Chirurgical Transactions*, vol. 82, says that a comparatively infrequent variety of hip-joint disease is one which begins at the upper end of the diaphysis as a septic inflammation. It is a condition usually confounded with the various forms of tubercular trouble of the joint, but it is due to the staphylococcus or other suppurative bacteria. It may have the same causes as the tubercular variety, there often being a history of injury or some other condition, which lowers the vitality of the patient. Especially is it frequent after the exanthemata or influenza.

Its course is distinguished by the rapidity of the symptoms—pain, swelling, and redness rapidly showing themselves, with pronounced systematic reaction and a high temperature. The pain is usually severe. Upon opening the joint, the head of the bone is often found separated from the shaft and the articular surfaces not involved, there being an absence of erosions and granulations so characteristic of tubercular hip-joint disease. In these cases early operative treatment is indicated. The surgeon should not wait until an abscess forms and fluctuation can be determined, but the joint should be opened, washed out, and carefully drained. If the septic inflammation is relieved and the joint sterilized, immediate relief follows the operation, and oftentimes a useful joint results.

Operations in Gastric Ulcer.—

L. A. Bidwell, in the *American Journal of the Medical Sciences* for September, 1899, says that cases of gastric ulcer should be operated upon where there is perforation, at the earliest possible moment; also in cases where there is hemorrhage, either continual oozing of blood or in which the attacks are severe and repeated. Cases in which there is severe pain and vomiting, which is not relieved by treatment and which is accompanied by progressive emaciation, should be operated; also those with dilatation of the stomach, or where there are irregular contractions or distortions due to adhesions with other organs. In cases of perforation there should be laparotomy, with suture of the ulcer; in cases of hemorrhage, oozing in character or severe at periods, a gastrotomy with suture of ulcer, which may be combined with a gastroenterostomy; in the cases with severe pain and vomiting, unaffected by treatment, a gastroenterostomy should be performed to give physiological rest to the ulcer. In cases of dilatation with adhesions, a plastic operation should be performed. The writer says that as the surgery of gastric ulcer is a comparatively new subject, he has tried to show that no patient ought to be allowed to die, either from perforation or hemorrhage, without an operation; that the earlier this is done, the better the chances of success.

Carbolic Acid in the Treatment of Mastoid Wounds and Chronic Suppuration of the Middle Ear.—

W. S. Phillips (*Medical Record*, Sept. 2, 1899) states that, for the past three months, he has employed carbolic acid in the treatment of mastoid wounds and chronic suppuration of the middle ear with necrosis, and in the sinuses so often left after mastoid incisions.

Ordinary 95-per-cent carbolic acid was used, which was applied by means of a cotton probe. Later on it was found that where the disease affected the attic, it was difficult to get the carbolic acid in contact with the tissues. To overcome this difficulty, he constructed a spraying apparatus with a finely drawn tube, so that the acid could be sprayed into the attic and middle ear. In nearly all the cases so treated the suppurative process almost immediately subsided. The alcohol, which it is necessary to use immediately after the carbolic acid, causes considerable discomfort, therefore it is advisable to avoid using an excess of the acid. So far, he has observed no ill effects or inflammatory reaction resulting from its use.

The Removal of Blood-stains from Clothing.—

J. T. Rugh, in the *Philadelphia Medical Journal* of August 12, 1899, says that hydrogen peroxide will remove blood-stains from linen or other fabrics. The earlier the application is made the better the result, but even old blood-stains may be completely decolorized by this method. The peroxide should be used in full strength and the application repeated until the stain is entirely obliterated, this being hastened by rubbing the spot with the finger or a cloth during the application. If hot water has been used, or anything that will coagulate the albumin, the peroxide will not remove the stain. By this method he has often removed spots from the shirt-front, collar, and cuffs, and after the surface had dried there was no evidence of soiling. The color of fabrics is not changed by the peroxide.

THERAPEUTICS.

Treatment of Chronic Morphinism.—

H. A. Pressey, in the *Journal of the American Medical Association* of August 12, 1899, says that the sudden withdrawal of morphine, according to the method of Levenstein, is barbarous, and he thinks that no patient who had a previous knowledge of the suffering which would be endured where this method is followed would ever place himself under treatment. Modifications, as prescribed and followed by others who withdraw the morphine gradually, but yet have minimized the dose in advance of restoration of the nervous system, are almost equally severe. Erlenmeyer is of the opinion that the suffering in these cases is quite equal to those in which the drug has been suddenly withdrawn. Pressey thinks that this is

true with a fixed rule for reducing the morphine, but it is not true if the reduction in the amount is made only to such a degree as is warranted by the improved condition of the patient. He claims that in 90 per cent of the cases it is possible, by restoring the nervous system to its normal condition in advance of withdrawing the morphine, that each successive reduction is not noted by the patient. He never withdraws the fraction of a grain until the dose is so small that the patient is unable to tell when he took his last dose. The key to the situation is to keep the patient on just as small a quantity as is compatible with comparative comfort. He gives the morphine four times a day—at 7 A.M., 12 M., 5 P.M., and 9 P.M. The time is divided in this manner so as to administer the drug before meals and at bedtime. Under this arrangement the majority of cases improve in weight during the stage of withdrawal, and an occasional patient will say that he feels better during the treatment than while taking the morphine in larger doses than was needed. The writer has found the following prescription useful in sustaining the nervous system during a withdrawal:

℞ Strychnine..... ¼ grain.
Hydrastine hydrochlor..... 6 grains.
Sparteine sulph..... 3 grains.
Atropine sulph..... ⅙ grain.
Aqua..... 1 ounce.

M. Sig.: Twenty minims hypodermically four times a day at the same time morphine is given.

In conclusion, he says that no class of patients require so much personal attention as those under treatment for the morphine habit. He does not believe in any fixed form of medication, but each case should be studied in reference to its own needs. Baths and massage are beneficial in many cases. A hot bath at bedtime will sometimes secure sleep, while in others dry heat is more beneficial. These patients should take little or no exercise.

Eunatrol in Hepatic Complaints.—

This substance, sometimes called eunatron, is an oleate of sodium which is usually given in pill form coated with chocolate. It is said to be an excellent cholagogue, and the dose commonly employed is fifteen grains twice a day. A. G. Cipriani, in the *Therapist* of August 15, 1899, reports two cases of gall-stone in which this drug was given with marked relief to the symptoms. Not only did it cause a relief of the hepatic colic, with quick removal of the calculi from the bile-ducts, but it reestablished a flow of bile. In both cases there had been frequent hepatic disturbance, and the prompt

relief obtained on the administration of the drug leaves no doubt in the writer's mind that it has a specific effect in favoring the excretion of the calculi. The explanation which the writer gives is that when a gall-stone with a rough, uneven surface becomes impacted in the gall passages, it excites a tonic muscular spasm which, instead of facilitating the passage of the stone, retains it in its position. This leads to extreme pain; a catarrhal condition of the ducts is excited, which may ultimately lead to ulceration and suppuration. The retention is frequently at the duodenal orifice of the duct. When this occurs, jaundice is a frequent accompaniment of the hepatic colic. The action of the oleate of sodium is due to the fact that the intestinal juices turn it into a greasy fluid which spreads over the surfaces of the stomach and duodenum. As soon as it comes into contact with the mucous membrane of the stomach, the spasms which form the principal element of the crisis cease through a reflex action. It favors the passage of the gall-stone, and in addition augments the flow of bile, and so favors its expulsion by a direct increase of the pressure in the gall-ducts.

Treatment of Chronic Gastritis.—

W. C. Bilbro (*Monthly Cyclopedia; Clinical Journal*, Aug. 16, 1899) remarks that each case should be especially individualized, studied, and traced, as there are no two alike and no two require the same diet and medicine. There is absolutely no routine treatment successful. The successful treatment of chronic gastritis depends very much on the patient's resolution and perseverance in carrying out the instructions he receives. Mental influences are important in the treatment. Arsenic in small doses, long continued, is one of the most potent drugs in any mucoid inflammation of the stomach and bowels. Nux vomica is indicated and should be given in doses of not less than twenty drops of the tincture, or from $\frac{1}{20}$ to $\frac{1}{16}$ grain of strychnine. Hydrochloric acid is almost always admissible and useful. Lavage is an important factor in the treatment. The object is to thoroughly clean the stomach, and nothing is better than papoid and water, the patient not being allowed to take any nourishment for thirty minutes or an hour after washing. Diet must be strictly regulated; all irritating or indigestible food must be strictly prohibited, and only that which is most easily digested and assimilated allowed. Milk does not agree with every person, especially sweet milk, but when it can be taken alone or diluted with one-fourth lime-water, given in small quantities and at frequent intervals in extreme cases, it will be found valuable. Tea and coffee, as a rule,

should be avoided; alcoholic stimulants should not be allowed unless in cases of habitual drinkers; then a little good whiskey in Vichy water is admissible. Regularity in the times of administration and in the quantity of nourishment given is most essential.

Parotid Gland Extract in Ovarian Disease.—

E. P. Mallett, in the *New York Medical Journal* of August 26, 1899, reports upon twenty cases of ovarian disease treated by the extract of parotid gland. It was given in three-grain doses in the form of capsules. He does not attempt a physiological explanation of the effects of this substance on ovarian structure, but says it has seemed to relieve the pains of dysmenorrhea in all cases, without regard to the supposed cause or pathological condition present, to a greater extent than any of the so-called uterine sedatives. It relieves the dull aching pains referred to the back and ovarian region, which have been variously designated as reflex pains, ovarian neuralgia, etc. Menstruation when deranged becomes more regular as to periodicity, less in amount, and of shorter duration. During the administration of the gland pelvic exudates soften and absorb more rapidly under massage. The general health, strength, and spirits improve under its use, and the dull headaches which constitute such a persistent symptom in these cases are invariably relieved. The only counter-indication he has met with thus far has been in those in whom both ovaries have been removed and a menopause enforced. In these the distinctive phenomena were increased.

Arcoline in Glaucoma.—

J. C. Clemesha, in the *Buffalo Medical Journal* for September, 1899, says that the bromohydrate of arcoline is a white, crystalline, soluble salt which is employed in eye-work in a one-half per cent watery solution. This dropped into the conjunctival sac causes contraction of the pupil. It is accompanied by a slight burning sensation, and slight conjunctival congestion. In from three to five minutes the pupil begins to contract, reaching its maximum in from ten to fifteen minutes, there being an accompanying spasm of the ciliary muscle. The full effect remains for a quarter of an hour, after which the pupil gradually returns to its normal size. The tension of the normal eye does not seem to be affected by it, but in cases of glaucoma clinical results show this drug to be the equal of eserine. It seems to act more promptly and more energetically than eserine, but its effects are of shorter duration. When kept in solution it retains these active properties unchanged for a long time.

Toluidin-blue in the Treatment of Conjunctivitis.—

C. A. Veasey, in the *Pennsylvania Medical Journal* for August, 1899, speaks of the use of this substance in the treatment of external inflammatory conditions of the eye. Toluidin-blue is a crystalline powder, soluble in alcohol or water. The strength of the solution which has been employed is 1 to 1000. Weaker solutions, or those much stronger, running up as high as 1 to 20, have been used, but they are found to be no more effective, and they stain the skin very deeply. The strongest solutions that were employed did not produce irritation. In using the remedy the conjunctival sac is first thoroughly flushed with boric acid solution, then the toluidin-blue is applied. The advantage of using this substance is that every particle of mucus or muco-pus is stained a deep blue, and none can remain on the conjunctiva without being detected. The stain on the fingers is easily removed by a moist pledget of absorbent cotton. The more copious the discharge, the more frequently should the application be made.

Inguinal Hernia Treated by a New Method.—

Harry Lane, before the Portland Medical Society (*Medical Sentinel*, August, 1899), described what he says is a new surgical method for the treatment of hernia. He claims that it permits the patient to continue his daily work, that it is inexpensive, and promises relief, if not cure, to a large majority of these cases. It consists of the introduction of a needle into the inguinal canal, which is connected with a battery and twenty milliamperes allowed to pass for about twenty minutes. He claims that there is an absence of pain, there is no rise of temperature, and the patient continues his usual occupation. A truss is worn for from fifty to sixty days after the treatment, which, if not followed by a return of the hernia, is then left off, and the case is regarded as cured. The history of several cases with successful results was given. Two of these were in cases of twenty years' standing, in which there had been no recurrence for three years after operation.

Inunctions of Creosote for Malarial Fever.—

The *Interstate Medical Journal* for August, 1899, is authority for the statement that A. O. Fitzgerald, medical officer in charge of the Station Hospital at Belgaum, has treated twenty-six cases of malarial fever of different grades by inunctions with beechwood creosote. They were all obstinate cases and resisted the treatment with quinine, arsenic, etc. Among these cases were instances of

tertian ague of a severe type, malarial cachexia, and "malignant" malaria. The treatment seemed especially indicated where there was much vomiting and restlessness. The method of administration is to take pure beechwood creosote—fifteen to twenty minims for a child of one year, and thirty to sixty minims for an adult. It is mixed with an equal quantity of olive oil and thoroughly rubbed into the chest, abdomen, and axillæ. The oil is employed only as a diluent and to counteract the tingling and burning occasionally produced by the creosote.

The Treatment of Chorea.—

S. D. Hopkins, in the *Journal of the American Medical Association* of August 12, 1899, reports on the treatment of nineteen cases of chorea. He has obtained the best results with antipyrin, which is given according to the method of Dr. Eskridge. The drug is given in increasing doses, the initial dose being as many grains as the child has years, and increased one grain a day. In mild cases the antipyrin is given in the evening, but if severe it is given three times a day. In the mildest cases the patient is allowed to sit up a part of the day, but in severe cases absolute rest in bed is enjoined. Antipyrin is not given if there is fever, or if the heart is weak. As soon as the choreal movements cease, or become greatly diminished in severity, the antipyrin is stopped and small doses of arsenic and iron are ordered.

Suprarenal Extract in Ophthalmic and Aural Surgery.—

A. C. Aldrich, in the *Medical Dial* for September, 1899, says that suprarenal extract is entitled to a high place in the surgical treatment of the eye, ear, nose, and throat. The solution of suprarenal gland decomposes very easily, and unless some antiseptic is added it will not last more than twenty-four hours. He uses a solution composed of ten grains of the extract with ten grains of boric acid to an ounce of sterilized water. This solution produces a prolonged blanching of the surface, which not only enhances the action of cocaine, but furnishes a field of operation free from blood and in which incisions can be made with great precision.

The Galvanic Current in Dysphonia.—

T. C. Christy, in the *Philadelphia Medical Journal* of September 9, 1899, says that the galvanic current is a curative agent in laryngeal and tracheal affections. One of its chief advantages is ease of application. It is soothing and agreeable to the patient, relieving

congestion, pain, and irritation. There is no spasm of the glottis, and it tends to reduce swollen lymphatic tissues. The patients with laryngeal troubles who are systematically treated by the galvanic current return regularly for the applications, which are almost invariably followed by a subjective improvement, of which the patient is quite conscious.

Sulphate of Duboisin in Paralysis Agitans.—

X. Francotte, in the *Journal de Neurologie* for May, 1899, gives the results of his treatment of twelve cases of paralysis agitans with duboisin. In nine of the cases there was a marked amelioration in the symptoms, though, of course, there was no case which could be considered cured. The drug seemed to exercise an especially favorable influence over the rigidity, and in the cases which it helped the tremor was much decreased. The drug was used in the form of granules which contained half a milligramme each; these were given two, three, or six daily, according to the physiological effects. The drug was held at its full dose for a long period of time. Marked tolerance for the drug was not established, and its favorable influence seemed to continue nearly as long as the administration. Two of the cases treated were not improved, and these showed marked intolerance of the drug from the beginning.

The Treatment of Pneumonia in the Aged.—

R. H. Babcock, in the *Journal of the American Medical Association* of August 19, 1899, says that strychnine is generally well borne by old people suffering with this disease, and it should be given in large doses. Stimulants, especially alcohol, should be given in small or moderate doses, and ammonia in frequently repeated doses. Care should be exercised in medication, to avoid upsetting the stomach, as nourishment is of prime importance in the treatment of this class of cases. Because of the tendency to renal insufficiency, the food should be largely fluid, milk and properly prepared beef juices being the best form.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Foreign Bodies Accidentally Left in the Abdominal Cavity.—

In *Progressive Medicine* for June, 1899, is an excellent summary of a case of this kind, together with some account of the extraordinary variety of substances which have found their way into the abdominal cavity during operations. We know of a clever surgeon who had the misfortune to leave a gauze sponge in the abdominal cavity of a patient during an operation upon the uterine appendages. Later a fistula formed, and she returned to the surgeon, who diagnosticated trouble with the appendix, cut down and removed the gauze drain, incidentally amputating a quite normal appendix, and did not forget to charge a liberal fee for saving her life a second time.

The foreign bodies which are left in the abdominal cavity are exceedingly varied, though gauze sponges and hemostatic forceps are by far the most frequent. Boldt reports two cases occurring in his own practice in which gauze sponges were left in the abdominal cavity. In one of these the gauze was passed two months later by the rectum, and in the other it occasioned obstruction and resection of the injured intestine, resulting in the death of the patient. A case is reported by a French writer in which a piece of gauze twenty-six centimeters in length, folded four times, was passed per rectum, and, strange to say, the entrance of the pad into the bowel and its discharge were not attended by marked symptoms. A case is reported as having occurred in the western part of the United States, in which a seal ring was found in the Douglas cul-de-sac. Boldt reports these cases as a warning rather than a series of interesting but unfortunate surgical accidents.

For the purpose of walling off the abdominal cavity during operation, he advises the use of towels or long strips of gauze with forceps attached to the projecting ends. To prevent accidents, no pad of this kind, used for an operation, is permitted to be torn or cut to meet an emergency. They are never thrown on the floor, but must be placed in a receptacle for that purpose. All pads and forceps must be controlled by double count, before beginning and at the conclusion of an operation. Before closing the abdomen the sponges and forceps should be counted, and a certain number should be employed each time; if more are needed, multiples of this number should be used.

Hydrophthalmos.—

W. L. Pyle, in the *Annals of Ophthalmology*, uses this term to designate a uniform increase of all the diameters of the infant's eyeball due to distention of the elastic sclera under increased ocular pressure. The condition may be unilateral or bilateral, and usually occurs at birth or in early infancy, although cases of later development are sometimes noted. Great confusion has arisen in the study of this subject, because of the large number of terms which have been employed to designate it. Hydrophthalmós is undoubtedly the best name to use, as it describes a general condition and does not indicate its causation or interpret any of the local expressions of the disease. The condition is recognized at birth, and the incipient stages are usually intra-uterine. There is slow progressive enlargement of all of the diameters of the eyeballs, with opacity of the cornea and vitreus, detachment of the retina and excavation of the nerve head. At a certain stage in its course the disease may be entirely checked, and it may remain stationary. In such cases the tension diminishes to slightly above normal. The cause of the trouble is very obscure, and there is evidence that heredity plays an important part in many cases.

The diagnostic symptoms are uniformly enlarged and protruding eyeball, insufficient lid action, increased tension, sluggish and dilated pupil, atrophic iris which appears tremulous if the lens is luxated, peculiar bluish sclera, corneal opacity, anesthesia, deep anterior chamber, restlessness, ill-temper, constant rubbing of the eyes, and other symptoms of local pain. The prognosis of early operation in hydrophthalmos is far more favorable than text-books lead us to believe. If the condition is recognized early in infancy and shows no improvement on treatment with the iodides, mercurials, and myotics, paracentesis should be tried. This failing, an iridectomy should be performed on the worse eye, unless the eyeball is very large, when repeated sclerotomies should be substituted. The earlier the operation, the better the result. Refractive errors should be corrected.

The Diagnosis, Classification, and Treatment of Cystitis.—

E. C. Dudley, in the *Canada Lancet* for August, 1899, says that cystitis, which ranked as a distinct disease with the older writers, is now properly relegated to the rank of a symptom. Within a single decade the management of this symptom has arisen from the plane of empiricism. This change has come about chiefly as a result of

investigation of its causes, including the identification of the rôle which bacteria play and of improved instruments for direct inspection. Many of the causes which were formerly considered as prime factors in the production of this disease are now relegated to their proper places as predisposing conditions. All forms of cystitis are now traceable to pathogenic bacteria as the direct exciting cause. Alkalinity of urine depends upon the action of certain bacteria, notably proteus vulgaris, in the decomposition of urea. The bacillus coli communis is a germ which frequently causes cystitis, but as it does not decompose the urea the urine does not become alkaline. In many cases of cystitis, perhaps the majority, the urine is not alkaline, but acid. If it becomes alkaline, it is frequently due to secondary infection of the bladder. The diagnosis should not only determine the character of the infection of the bladder, but, what is of more importance, it must thoroughly identify the character and source of the inflammation. Simple and uncomplicated inflammation of the bladder is rare. The endoscope and cystoscope are valuable agents in diagnosis and in guiding to a correct treatment. Washing out of the bladder as a routine measure is not approved, and the injection of disinfectants is indicated only in general cystitis. For localized cystitis, direct applications to the part affected should be made through the endoscope. The most valuable disinfecting agent in cystitis is the nitrate of silver.

Wound Infection as a Cause of Puerperal Infection.—

A. T. Hobbs, in the *American Journal of Insanity* for July, 1899, divides the septic insanities of the puerperium into three classes: (*a*) Puerperal insanity with little or no local lesion, caused by local infection. The majority of these cases, being of short duration, recover at their homes; they are usually of a mild confusional type or a form of muttering delirium. (*b*) Puerperal insanity complicated by gross local lesion, the result of septic infection. These are usually of a more serious character; the local inflammatory lesion, acting as a focus, keeps up the irritation by the continued addition to the blood of infectious substances. (*c*) Postpuerperal insanity induced by pelvic disease, the latter being the result of septic infection. In these cases the insanity may not develop for from six to eight or eleven months after the delivery.

During the past four and a half years the author has had, at the London asylum, 187 women, both recent admissions and chronic patients. Distinct pathologic lesions were found in 163. Of these,

no less than eighty had inflammatory lesions of the pelvic organs, brought on by septic infection at the time of the puerperium. All had marked subinvolution or chronic metritis, and forty-two had complicated disease of the cervices. Thirty-three had retrodisplaced uteri, and nineteen had more or less seriously lacerated perinei. Eleven had inflammatory tubal or ovarian disease, three had fibroid tumors, and one a deep rectal fistula. Surgical treatment of these eighty cases produced an improved physical health in almost all of them. Forty-five per cent recovered mentality, and 25 per cent were greatly improved. In 30 per cent the mental condition remained stationary.

Fatal Acute Alcohol Poisoning in a Child.—

M. A. Walker, in the *New York Medical Journal* of August 19, 1899, reports the case of a boy six years and three months old, who between 8.30 and 9.30 A.M., on an empty stomach, drank about three ounces of whiskey. An hour later, while at breakfast, he fell from his chair. At 10.15 he went to sleep on the floor, and his mother put him to bed. At 7.30 that evening the child could not be roused, and the physician was sent for. At this time the little patient was comatose; the pupils did not react to the light, were widely dilated, but of equal size; the bulbi were drawn inward and upward, and the conjunctivæ were insensitive. The pulse was 145, small, weak, compressible, but regular. Respirations were 40 and quiet. The axillary temperature was 103.2° F. In spite of all efforts at relief, there was continued failure of respiration and heart's action. At 10.30 P.M. there was a severe clonic convulsion, lasting about ten minutes. After this there were recurring localized spasms of the muscles of the face and extremities, more on the left side than the right. Occasional nystagmus was present. Cheyne-Stokes respiration began at 2.45 the following morning, and death by cardiac failure occurred at 5 A.M., about twenty hours after the drinking of the whiskey. Just before death the temperature reached 105.3°. With slight exception, no method of stimulation that was employed had a material effect in improving the heart's action.

Maternal Impressions.—

Henry F. Lewis, in the *American Journal of Obstetrics* for July, 1899, discusses this subject. He leans strongly to the view that monstrosities are not due to maternal impressions, but are due to anomalies of development in the ovum, which are not in any way

influenced by the mental condition of the mother. If, he maintains, maternal impressions explain human anomalies, they should also explain such occurrence among the lower animals and even among plants. Monsters are even more common among domestic animals and fowls than among men. They are even relatively common among reptiles, fishes, insects, not to speak of nuts, oranges, and corn-cobs. The strongest blow is dealt to the theory of maternal impressions by the results of experiments in the production of monsters artificially. Numerous experiments have been performed upon eggs, fishes, and insects, which have resulted in the production of almost all the typical varieties of monsters. Different varieties can even be produced at the will of the experimenter. In human fetuses, even at full term, there are sometimes found remains of amniotic bands and adhesions, which obviously, by interfering with development of different parts at an early period of gestation, were the causes of various malformations. In short, all malformations in monsters can be explained by purely physical and mechanical causes, entirely remote from psychic influences.

Preservation of Milk by Refrigeration.—

Henry O. Marcy, in the *Journal of the American Medical Association* of September 16, 1899, describes the process which has been devised by Mr. B. F. McIntyre, by which the milk supply of cities can be very greatly improved, and which is withal economical. By this process 80 per cent of the water is abstracted from the milk by freezing. The water, as ice, is taken from the milk in comparatively stainless crystals, with slight loss of solids. The expense of this method of condensation is very much less than by evaporation, and the product is of greater value.

A series of experiments have been made by W. T. Sedgewick at the Institute of Technology in Boston, to ascertain the effect of this method of treatment upon bacteria in milk. He found that the milk was not sterilized by this process, but that a large number of the bacteria were destroyed, with an improvement in the keeping qualities of the milk. In glass containers the concentrated milk will keep for weeks. A plant has been established near Boston to demonstrate the commercial advantages of the method, which is believed to offer a practical solution of the difficult and expensive milk problem in cities. In the process the fat globules are uninjured, and as a result cream is unimpaired for table use. Certain economic advantages are claimed for the process, which, it is thought, will effect a material reduction in cost of milk.

Belladonna in the Bronchial Pneumonias of Children.—

D. A. Hodghead, in *Pediatrics* of September 1, 1899, describes the case of a child with a rapid pulse and high temperature, with labored breathing and coarse moist râles all over the chest. There were consolidated areas of lung tissue, and cough was almost incessant. In short, the case was one of bronchial pneumonia of a violent type. The usual treatment by laxatives and poultices failed to give relief; the pulse became more rapid and the respirations shallow. At this point the treatment was supplanted by one-tenth of a grain of calomel every hour, alternating with two drops of tincture of belladonna. In twelve hours there was marked improvement, and in twenty-four hours the temperature and respirations had fallen. Impressed with the excellent results in this case, the same treatment was tried in thirty other cases, with a mortality of about 10 per cent. The writer claims that prior to the employment of this treatment the death-rate from this disease had been from 60 to 80 per cent. Nothing original is claimed for the use of calomel in these cases; he regards it as a valuable adjuvant to the belladonna, which produced a dilatation of the superficial capillaries, and in this manner relieved the congested lung. It also diminishes secretion in the bronchial tubes and pulmonary tissues, and thus aids in warding off threatened asphyxia.

An Early Sign of Pregnancy.—

R. von Braun-Fernwald, in the *Wiener Klinische Wochenschrift* of March 9, 1899, refers to the well appreciated fact that one of the earliest signs of this condition is the change in the consistency of the uterus. A further extension of the distinction he finds to be a difference in the anteroposterior diameter of the uterus—that it is thicker on one side than on the other, and between the two sides there is a central groove. The explanation which he gives of this peculiarity is that the ovum is rarely attached in the central line; as a result there is a thickening of one or the other lateral horns. He was able to confirm by this sign much earlier than by any symptoms that have heretofore been described. His observations were confirmed in a large majority of cases by the subsequent history of the case. He has found the sign to be of value in cases of abortion in which the ovum is expelled; in these cases the central groove and the lateral thickening are absent. On the contrary, if it is not detached, these signs remain. The sign is also of marked value in cases of ectopic gestation in which there are the ordinary signs of pregnancy, but the central groove and the lateral thickening are absent.

Constant Sponging in Reducing Temperature.—

E. Crocker, in the *National Hospital Record* for September, 1899, says that the external use of water is of great value in reducing temperature. The full bath can be given but seldom, and the cold bath has its limitations, but sponging is always admissible and often of much more value than either. The temperature is readily reduced by this means, and with a restless child, with a temperature of 104° and over, some nurses think that all is accomplished that is needful by a bath once in an hour or two. This infrequent sponging the writer thinks is worse than useless. He advises the use of water that gives no unpleasant shock to the patient—that is, water that is of an agreeable temperature. He says that it is the evaporation of the water which cools the skin. The face, neck, hands, arms, feet, and legs, and so much of the body as can be easily reached, should be bathed, not forgetting to turn the patient over and bathe the double-heated back; then begin all over again, not touching the skin with a towel, but allowing it to dry. He says there is a wide difference between occasional sponging and sponging practically without intermission, never allowing the body to become dry and heated.

Inoculations of Scarlet Fever.—

In the *Medical Record* of September 9, 1899, J. W. Stickler reports the results of inoculations of scarlet fever in children. The secretions employed were from the throat of a patient suffering from mild scarlet fever, in whom the eruption had appeared. The original purpose of these inoculations was to demonstrate the value of a protective serum. In all the cases inoculated a genuine scarlet fever was produced, and it was practically demonstrated that the throat and mouth contained the germs of the disease. He claims that the results of these inoculations show that the secretions of the mouth are especially virulent, and he regards them as one of the important means of spreading the disease; hence care should be taken to disinfect the mouth and prevent the contamination of bedclothing, toys, and other articles which may convey the infection.

The Origin of Tuberculosis in Children.—

B. F. Still, in the *British Medical Journal* of August 19, 1899, reports results reached by him in 269 cases of tuberculosis in children, in which post-mortem examinations were made and special study given the primary channels of infection. Contrary to the accepted belief, the writer states that by far the most frequent mode

of infection is by inhalations through the lung, and that infection by way of the intestinal tract is less common in infancy than in later childhood. Milk, therefore, furnishes a comparatively rare source for the development of tuberculosis. Prophylaxis is not attained by sterilizing the milk, but by making the sanitary surroundings better—providing for ventilation and an abundant supply of fresh air, as well as proper nutritious food.

Complete Prolapse of an Ovarian Tumor Through the Anus.—

H. A. Baughman (*Illinois Medical Journal*, August, 1899) reports the case of a patient who had for many years been invalided by half-concealed symptoms, that proved to be due to a prolapsed rectum, this organ protruding to the extent of twelve centimeters. It was found that the three coats of the bowel were included in the protuberance, as well as a hard, round tumor about five centimeters in diameter, which lay in the anterior fold of the rectal projection. This tumor was freely movable, tender, and was attached to a long pedicle that reached up and into the pelvis, and proved to be ovarian ligament and Fallopian tube.

FORENSIC MEDICINE.

John Hunter as a Medical Witness.—

G. V. Poore, in the *Clinical Journal* of August 23, 1899, discusses cyanide poisoning and cites the case of the King *vs.* Donellan. The case is especially interesting, as the celebrated John Hunter made his one appearance upon the witness-stand in that case. In 1780 Captain Donellan was put upon trial for the murder of his brother-in-law, Sir Theodosius Boughton. Donellan and Boughton lived in the same house, and it was known that the former would benefit pecuniarily by the death of the latter. An apothecary had prescribed for Boughton, and the draught, which was supposed to be a purge, was administered by the mother of the deceased, though she noticed when administering it that it smelled of bitter almonds. Boughton died half an hour after taking it, in convulsions. Donellan emptied and rinsed out the bowl which had contained the draught. Captain Donellan had a chemical "still" in his room, which he had given to a servant to clean a few days previously, it having been recently used. The medicine which had been administered by the apothecary contained no oil of bitter almonds.

The body of Boughton was exhumed and evidences of congestion

were found. Hunter was called as a witness. He testified that the post-mortem signs were all due to putrefaction, and that death might have been due to apoplexy; the head not having been opened, it was impossible to say whether this was so or not. Being asked in cross-examination whether the fact of a man in perfect health, dying in convulsions immediately after swallowing a draught, did not point to poison, he replied: "If I knew the draught were poison, I should say most probably that the symptoms arose from that; but when I do not know that the draught was poison—when I consider that a number of other things might occasion his death—I cannot answer positively to it." Hunter admitted that it was not very probable that Sir Theodosius Boughton died of apoplexy. The final question asked by the court was: "Give me your opinion in the best way you can, one way or the other, whether, upon the whole of the symptoms described, death proceeded from that medicine or from any other cause;" to which Hunter answered: "I do not mean to equivocate, but when I tell the sentiments of my own mind—what I feel at the time—I can give nothing decisive." The judge made the following comment on the testimony of Mr. Hunter: "For the prisoner you have had one gentleman called; he is likewise of the faculty, and a very able man. I can hardly say what his opinion is, for he does not seem to have formed any opinion at all of the matter. He, at first, said he could not form an opinion whether the death was or was not occasioned by the poison, because he could conceive that it might be ascribed to other causes. I wished very much to have got a direct answer from Mr. Hunter, if I could, what upon the whole was the result of his attention and application to the subject, and what was his present opinion, but he says he could say nothing decisive. So that, upon this point, if you are to determine upon the evidence of the gentlemen who are skilled in the faculty only, you have the very positive opinion of four or five gentlemen of the faculty that the deceased died of poison. On the other hand, you have what I really cannot myself call more than the doubt of another; for it was agreed by Mr. Hunter that the laurel-water would produce the symptoms which are described. He says an epilepsy or an apoplexy would produce the same symptoms, but as to apoplexy, it is not likely to attack so young and so thin a man as Sir Theodosius was; and as to epilepsy, the other witnesses tell you that they do not think the symptoms which have been spoken of do show that Sir Theodosius had any epilepsy at the time." The jury brought in a verdict of guilty, and Captain Donellan was executed a few days thereafter.

A remarkable circumstance which came to light afterward was that a still that had been recently used was discovered on the premises. Donellan was so bad a chemist that on being asked for what purpose he had procured this machine, he replied: "I used it to make lime-water to kill flies." In his laboratory there was found a single number of the *Philosophical Transactions*, and of this volume the leaves had been cut in only one place, which opened to an account of the mode for making laurel-water by distillation.

John Hunter, in the opinion of Poore, made a phenomenally bad witness, yet he says that one cannot help agreeing with many of the doubts that Hunter raised in this case.

Fatal Case of Formalin Poisoning.—

Charles Bock, in the *Fort Wayne Medical Journal-Magazine* for July, 1899, reports a case of formalin poisoning occurring at the School for Feeble-minded Youths. The patient was a low-grade imbecile, 20 years of age, strong and healthy. The amount taken was from one to three ounces of a four-per-cent solution. Immediately after taking there was pain in the stomach and vomiting. The vomited matter was blood-stained and had a strong, pungent odor of formalin. Large quantities of albumen water were immediately given, and an emetic of apomorphine was administered hypodermically, which produced free emesis. Two hours after the injection of the emetic the blood had disappeared from the vomited matter, and the odor of formalin was faint. The patient at this time was weak, complained of pain in stomach, but the heart's action was good. The temperature was normal. After six hours he was given at short intervals small quantities of plain and albumen water with about four ounces of peptonized milk, which was retained. There was occasional vomiting, and three natural movements of the bowels. Improvement seemed continuous until the sixteenth hour, when a weakening of pulse was noticeable. He was given one-twentieth of a grain of strychnine sulphate under the skin, and one hour later one one-hundredth of a grain of nitroglycerin. At the twentieth hour the pulse still remained weak and the temperature normal. He was given sulphate of strychnine, one-sixteenth grain every hour, and sparteine sulphate one-fifteenth grain, by the mouth. Twenty-seven hours after drinking the liquid the pulse was 92, weak, soft, and small in volume, and the temperature 102°. Slight pain in the stomach, no nausea, and apparently comfortable. At the twenty-ninth hour the heart's action began to fail, and the respirations were 40 per minute. He was

given seventeen ounces of normal saline solution hypodermically, and at the thirty-first hour sixteen ounces intravenously. Notwithstanding this, the general cardiac depression continued, resulting in death at the thirty-second hour, there being an occasional sign of faint cyanosis during the last hour. The autopsy, made one hour later, showed lividity of the lips and eyes; *rigor mortis* marked. The heart was in systole, the right ventricle being distended with dark blood, which did not become bright with the injection of pure oxygen. There were no clots. There was no edema or marked congestion of the lungs. The peritoneal cavity contained a large amount of clear serum. The peritoneum was normal. The upper two-thirds of the esophagus was slightly inflamed. The stomach contained four ounces of a dark fluid, which upon chemical examination was found to contain no formalin. The stomach walls were thickened and edematous, the cardiac end being red and highly inflamed. The remaining portion of the stomach, down to and including the muscular coat, was necrotic, dark, tough, and cut like old leather. The external surface of the stomach presented posteriorly considerable congestion, and anteriorly areas and spots of congestion. Inflamed areas were found in the duodenum, confined principally to the valvulæ conniventes. Microscopic examination of the stomach was difficult, owing to its walls being hardened. The infiltration with paraffin was slow and imperfect. Sections showed that the cells were completely destroyed.

Hospital Liability.—

W. H. Heath, in the *Buffalo Medical Journal* for September, 1899, says that the question of hospital liability to patients is one of the utmost importance. While the subject is in the transitional state, one phase of it has arisen and has been passed upon by the Appellate Division of the Supreme Court of the State of New York. The case was that of Ward *vs.* St. Vincent's Hospital, and concerns the liability for negligence on the part of the hospital service. Miss Ward had engaged a surgeon to attend her, he being one of the visiting surgeons of the hospital. She engaged a private room, paying twenty-five dollars per week, and this included the regular services which are given paying patients in private rooms. In addition she contracted with the hospital for a special trained nurse, who was to be paid three dollars per day. After the operation, while still unconscious, she was carried from the operating-room and placed in her own bed. In this was an unprotected rubber hot-water bag. Coming in contact with this, her leg was so seriously

burned as to prevent her recovery, and, as she claimed, left her permanently injured, and necessitated a change in her manner of life, which had formerly been one of great physical activity.

The trial court dismissed the case on the ground that the action was one of tort and not contract; that the hospital was liable only for the original selection of servants; that it was a charitable institution not run to make money, the money from paying patients going to support the charity cases; that placing the liability upon them as such would restrict their efforts to aid suffering humanity; that it is necessary occasionally for the one to suffer for the many.

On being carried to the Appellate Division it was agreed to grant a new trial. The decision of the higher court was that there was a distinction between the public ward and the private-room department of a hospital. The hospital in this case entered into a distinct agreement to do certain things, which they did not do in full. Instead of supplying a skilled, fully trained nurse, they substituted a person who had only had nine months of the two years' training course. Had a *trained* in contradistinction to a *training* nurse been placed on duty, it is probable that the accident would never have occurred.

The decision of the Appellate Court is interesting, as it seems to lay down a different degree of liability in pay patients from the purely charitable cases. It implies that where a corporation is conducting a charity with funds intended for that purpose it is not liable for the torts of its agents or servants, as it would be against law and equity to take funds contributed for charitable purposes to compensate for injuries occasioned by neglect.

While the decision does not establish the liability of a hospital for a tort, yet it does not preclude a hospital from entering into a contract with a pay patient, the liability for the violation of which is not to be avoided on the ground that it is a charitable institution.

Execution by Suggestion.—

The *New York Medical Journal* of September 9, 1899, copies from the *Indian Medical Record* an account of the celebrated execution by suggestion. The case is as follows:

"Many years ago a celebrated physician, author of a work on the effects of imagination, wished to combine practice with theory, in order to confirm the truth of his proposition. To this end he begged the minister of justice to allow him to try an experiment on a criminal condemned to death. The minister consented, and delivered to him an assassin of distinguished rank. The savant sought

the culprit, and thus addressed him: 'Sir, several persons who are interested in your family have prevailed on the judge not to require of you to mount the scaffold and expose yourself to the gaze of the populace. He has, therefore, commuted your sentence, and sanctions your being bled to death within the precincts of your prison. Your dissolution will be gradual and free from pain.' The criminal submitted to his fate, thought his family would be less disgraced, and considered it a favor not to be compelled to walk to the place of public execution.

"He was conducted to the appointed room, where every preparation had been made beforehand. His eyes were bandaged; he was strapped to a table, and at a preconcerted signal four of his veins were gently pricked with the point of a pen. At each corner of the table was a small fountain of water, so contrived as to flow gently into basins placed so as to receive it. The patient, believing that it was his own blood he heard flowing, gradually became weak, and the conversation of the doctors, carried on in an undertone, confirmed him in his opinion. They receded by degrees, and continued to lower their voices; and the stillness which reigned in the apartment, broken only by the dripping fountains, the sound of which was also gradually lessened, so affected the brain of the poor fellow that, although possessing a strong constitution, he fainted and died, without having lost a drop of blood."

This story has been repeated at intervals for years. The authenticity of it has been doubted. The case is certainly one of great interest, and it ought to be possible to determine whether this experiment was actually made.

A Case of Colocynth Poisoning.—

W. E. Jennings, in the *New York Medical Journal* of September 7, 1899, reports a case of this rare form of poisoning. The patient was a woman 29 years of age, who at 8 A.M. took an improvised tincture of colocynth prepared by macerating a colocynth "apple" in four ounces of gin for twelve hours. Within an hour there was faintness, giddiness, and vomiting, with pain in the epigastric region. At the end of three hours there was a large watery evacuation of the bowels, followed shortly afterward by a convulsion. At 2 P.M. of the same day the temperature was normal, tongue coated, pulse 62, weak and irregular. The respiratory and cardiac ratio were disturbed, and there was diminished intensity of the first sound of the heart. Subjectively there was extreme prostration, thirst, and epigastric pain. Toward evening of the day on which the dose was

taken a mild delirium set in, which continued through the night. During the first twenty-four hours vomiting occurred from twenty to thirty times, and there were four convulsions and four blood-stained evacuations of the bowels. On the following day there were ten evacuations of the bowels, with a continuance of epigastric pain and a pulse of 69. There was some improvement in the gastric irritability, as vomiting occurred but three times. On the third day there were fourteen stools, with slight improvement in the general condition. The gastric pain of which the patient complained ceased, and she complained for the first time of abdominal pain. The abdomen was tender on pressure, it being more marked on the right side. From this time on a fair amount of liquid nourishment was taken and retained. On the fourth and fifth days there were eleven and nine movements of the bowels respectively, with a pulse ranging from 82 to 85. On the sixth day there were twelve evacuations, and recovery from this time on was speedy.

In regard to the probable dose taken in this case, the author weighed several specimens of the dried fruit and found that they contained from three to four drachms, depending upon the number of seeds. The drug yields its virtues to both alcohol and water. The effect upon the system was to cause an acute gastroenteritis accompanied by cardiac depression, and more or less effect upon the central nervous system.

Interpretation of the Indiana Medical Practice Act.—

Attorney General Taylor, of Indiana (*Journal of the American Medical Association*, Aug. 12, 1899), was recently asked to give an opinion regarding the standing of Christian Scientists, Dowieites, osteopaths, etc. He stated the law of Indiana to be as follows:

"In view of these authorities, and especially of the decision of the Supreme Court of Indiana in the Benham case, it is my opinion that it is a violation of the law for an unlicensed person, assuming the title of a doctor, to prescribe or pursue any practice for the cure or relief of diseases, injury, or deformity, especially where any fee is charged for such services. It is perfectly obvious that the non-treatment of disease requiring treatment by an unqualified person may be as injurious as the administering of erroneous treatment or remedies, and it is my opinion that in enacting the statute of 1887 the General Assembly contemplated the protection of the public from the evil of non-treatment or non-action where necessary, as fully as it did from wrong treatment. In so far then as Christian Scientists, faith-curists, mental healers, and metaphysical medicators

advertise themselves as physicians, and accept fees for treating disease by silence or forms of prayer, or by moral advice, or by profound thought, or by absolute non-action, they unquestionably, in my opinion, violate the law. On the other hand, osteopaths and magnetic healers who hold themselves out as physicians and advertise an ability to cure diseases, or who accept fees for the treatment of diseases, by prescribing for them either medicines or the simple laying on of hands, are, if unlicensed, violating the law. On the other hand, if they abstain from claiming to be doctors and from advising treatment, but simply administer massage under another name, there is nothing in the law which forbids their giving to their treatment what name they please, and there is nothing in the law which requires masseurs to be licensed, and one who administers massage, whether recommended by a physician or voluntarily sought by an afflicted person, is at liberty to charge for services whatever he deems them to be worth."

Colchicum Poisoning.—

The *Medical Record* of July 29, 1899, reports a case of wholesale colchicum poisoning, which is quite unique in the literature. The number of cases of this form of poisoning is very limited. The case is reported from Eufaula, Alabama, where some negro ball-players were celebrating a victory over a distant club. One of the members, while in a drug store, stole what he thought was a bottle of wine. All of the boys drank freely of the beverage, and soon paid for their indulgence by vomiting, pain, and prostration. At the last account three of the negroes were dead, and the remaining four were not expected to recover.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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ORIGINAL ARTICLES.

THE TREATMENT OF GOITRE.[1]

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The frequency with which persistent enlargement of the thyroid gland is observed explains, to a large degree, the frequency of inquiry by the general practitioner as to the best method of treating goitre, and indirectly emphasizes the fact that the ordinary medicinal treatment is generally unsatisfactory.

The deformity which is caused by many of these enlargements is so conspicuous that their presence is looked upon by many, and with no small measure of justice, as an opprobrium upon the art of healing.

To properly present the whole subject of goitre would take more of your time than I would be allowed, and much more than I would presume to occupy. I have, therefore, limited my subject to the treatment of goitre and the essential points in differential diagnosis upon which rational and successful treatment depends. It is not my purpose to condemn the usual methods of treatment, nor to advocate the curative virtues of any one method to the exclusion of all others, but rather to give each its just due and to emphasize the importance of first determining the nature of the swelling, if possible, before instituting any plan of treatment.

In the first place, it is well to note that all chronic enlargements of the thyroid gland are known as goitres, and therefore chronic inflammatory processes, benign and malignant tumors, and swelling resulting from degenerative processes, as well as the enlargement accompanying that serious disease known as exophthalmic goitre,

[1] Read before the Illinois State Medical Society, May, 1899.

are included within the scope of this paper. Brevity will of necessity characterize the presentation of each phase of the subject.

We have three distinct pathological varieties of goitre: first, a chronic infective inflammatory process, ordinarily described as a parenchymatous or strumous goitre; secondly, tumor formations, including adenoma, carcinoma, and sarcoma; and thirdly, that variety which occurs as a part of Graves's disease. Other forms are either modifications or combinations of these varieties.

Struma is characterized by a uniform swelling which appears usually at or before puberty, and which is endemic in certain parts of this country and Europe. It is the most common variety and involves all of one or more lobes, and its growth is usually slow and uniform. It is a hypertrophy of all the elements of the gland, and presents the characteristic features of a chronic infective inflammation. Hard, soft, fibrous, and vascular goitres are, as a rule, of the parenchymatous variety, in which one element of the gland structure has been developed in excess of the others.

The next most common variety is the adenomatous form. They occur most frequently in cases of struma, and are characterized by the appearance of one or more distinct nodules in the substance of the gland. They are benign tumors surrounded by a definite limiting capsule. They are of slow growth and do not increase after fifty years of age as a rule. They are not attended by metastatic growths nor by cachexia.

The development of cysts in both the strumous and adenomatous varieties indicates an advanced degenerative change. The contents vary from straw color to dark red in accordance with the proportion of red blood-corpuscles, and the consistency varies with the character of the degeneration present. Like adenomata, cysts are limited by a distinct capsule or wall.

The malignant goitres are either sarcomata or carcinomata. They rarely develop as the primary swelling, but usually occur in glands which have previously been enlarged by a benign process. They occur late in life, and are usually marked by rapid growth with early evidence of dyspnea and cachexia.

The form accompanying exophthalmus, etc., is of the vascular type, and is attended by marked circulatory disturbances with dilatation of the vessels. The greater frequency with which other and more serious and even fatal forms of goitre develop in persons afflicted with struma establishes the deleterious effect of the inflammatory process upon the resisting powers of the tissues, and likewise emphasizes the importance of thorough treatment of all primary affections of this organ while they are yet benign. The compara-

tively frequent occurrence of sudden death in patients afflicted with goitre of even small size gives additional emphasis to the indication for regular, systematic medical and surgical treatment in all cases of goitre.

Struma is a chronic infective inflammatory process, and is therefore favorably influenced by the internal, external, and intraparenchymatous use of iodine. The administration of iodine solution by injection has been practically abandoned on account of the serious and occasionally fatal results that have followed its use. The intraparenchymatous injection of iodoform emulsion (half a drachm of a 10- or 15-per-cent mixture) is safe and often very successful. While iodine internally usually favorably influences this variety of goitre, it will rarely cure the condition. The internal administration of thyroid extract has apparently cured many of these cases, but it should be remembered that when this agent and also sodium phosphate are used to the extent to cause diminution in the size of the goitre, there is some danger of the atrophic process thus instituted progressing too far, with the production of tetany and myxedema. Thyroid extract should, therefore, be used cautiously, and the patient kept under close observation. The dose should be increased to the limit borne by the stomach, and continued for six to eight weeks. If it does not cause a marked diminution in the size of the swelling in that time, its use will probably be futile, and therefore it should be discontinued.

While the medical treatment of recent, and what may properly be termed recurring, goitre is quite saisfactory, the results of the medical treatment of chronic goitre are generally unsatisfactory. This fact is abundantly proven by the immense number of cases in which it has been tried only to be abandoned, and for the lack of other treatment the cases have been allowed to progress as their tendencies determined.

The effects of injecting fifteen minims of a five-per-cent solution of carbolic acid into the substance of the swelling, like that of iodoform emulsion, have been satisfactory in many cases, and especially when it has been combined with the medical treatment for the condition. While this method is safe and unquestionably more successful than the medical, it, however, remains a fact of common knowledge to all of us that many cases are uninfluenced by either of these methods, and for these enucleation or partial thyroidectomy is the only rational and satisfactory treatment. It is true that the operation is a delicate one and often very difficult, and that it is always attended with considerable danger; but the dangers of the operation are but little, if any, more than those of the condition

itself, and the difficulties are such as experience readily overcomes. The best proof that the operative treatment is, after all, the only satisfactory one is found in the fact that it is the universal practice with most Swiss and German surgeons in those localities where this form of the disease is endemic to usually resort to the knife without even trying the less heroic methods of treatment. By leaving one-fifth to one-fourth of the substance of a normal gland the secondary dangers of myxedema are obviated.

As strumous goitre is the common forerunner of the other varieties, allow me to again emphasize the importance of thorough and even radical treatment for this benign form of goitre.

Adenoma is a true tumor formation, and is therefore uninfluenced by any medical treatment, and consequently operation is the only rational procedure for this condition. Enucleation is especially indicated in adenomatous goitre, since the tumor has a distinct capsule which admits of its ready removal, and there is no danger of disturbing the general nutrition of the patient.

Cysts of the thyroid gland should be treated as cysts of most other localities. If evacuation and the injection of carbolic acid solution or iodoform emulsion fail to obliterate the cavity, the cyst wall should be enucleated by dissection.

In carcinoma and sarcoma of the thyroid gland we have extremely serious conditions to deal with. They are rarely primary affections, and therefore local eradication does not usually relieve the patient. It is, however, proper treatment to extirpate the whole gland when it is affected by a malignant growth, with the hope that it is the primary and only tumor. Complete extirpation of the tumor and of the gland affords the only hope of successful cure. If it is attempted at all the procedure must be radical. Partial removal only stimulates the rapidity of the growth, which invariably returns. Total thyroidectomy is usually followed by myxedema, unless thyroid extract is supplied by mouth or by implantation of fresh thyroid tissue.

The removal of all or only part of the thyroid gland is always attended by the danger of injury to the arteries and nerves. Hemorrhage is frequently profuse, and must be anticipated at every step of the operation. Paralysis following ligature of the recurrent laryngeal nerve has been observed several times, which emphasizes the importance of an accurate knowledge of the surgical anatomy of the region, and the necessity for careful dissection of the inferior segments of the gland. A proper appreciation of the disturbance of normal relations by the swelling enables a careful operator to avoid injury to these nerves.

Enucleation of an adenoma or cyst is the ideal operation. It is comparatively easy and simply requires careful dissection until the capsule is reached, when separation is readily effected. Hemorrhage can be controlled by closing the wound with buried sutures or packing if necessary.

That form of goitre which accompanies exophthalmus, etc., is quite distinct from the other varieties, as it is characterized by dilatation of the vessels, and auscultation usually determines the presence of a distinct bruit. One lobe or all of the gland may be involved. It is accompanied by other symptoms, which makes the diagnosis usually easy.

The disease has been successfully treated by division of the cervical sympathetic cord, and particularly by the removal of the middle cervical ganglion. Previously the ligation of the thyroid arteries had been resorted to with some success. These cases should be given the benefit of a course of medical treatment, but as it is admittedly usually futile, we must look to surgical methods for relief. This plan of treatment is, however, yet under trial.

From our present knowledge of goitre the following general conclusions seem justifiable:

1. Successful treatment depends upon accurate and early diagnosis of the nature of the goitre.

2. Struma should be treated by internal use of iodine or thyroid extract and the intraparenchymatous injection of iodoform or carbolic acid.

3. If these fail, either enucleation or partial thyroidectomy is indicated.

4. Adenoma should be treated by enucleation if the tumor is small, and by partial thyroidectomy if of large size.

5. Cysts should be treated by evacuation and injection of carbolic acid solution or iodoform emulsion.

6. If this fails, they should be enucleated.

7. Sarcoma and carcinoma should be treated by complete removal of the thyroid gland, with subsequent administration of thyroid extract.

8. The treatment of exophthalmic goitre is generally unsatisfactory, and at the present time surgical measures promise the best results.

9. Undifferentiated goitre may be treated by thyroid extract and iodine, but intraparenchymatous injections, and if necessary operative treatment, should be employed early.

10. The surgical treatment of all varieties of chronic goitre is, generally speaking, the most successful and most satisfactory.

REMARKS ON THE DIAGNOSIS OF LOCOMOTOR ATAXIA.[1]

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To introduce to this Society such a hackneyed theme as the diagnosis of tabes dorsalis may be unwarranted, but as I have seen in the last few years quite a number of cases of the affection which the general practitioner failed to recognize, as well as a number of cases in which the diagnosis of tabes has been wrongly made, I have ventured to think that a few practical remarks on the subject might not come amiss to some of the members not deeply versed in nervous diseases, and yet liable to see cases of locomotor ataxia. I shall consider only two phases of the subject, and those briefly: First, on account of what disabilities and discomforts does the tabetic patient consult the physician? and secondly, what are the signs and symptoms upon which a diagnosis of tabes should be based? To separately answer these two questions will necessitate some repetition.

For the victim of locomotor ataxia to first consult a physician on account of incoordination in walking is a rarity. As a rule other symptoms drive the patient to seek medical advice months or years before he is conscious of any ataxia in movement. Indeed, as we shall immediately see, this symptom may never appear, even though the disease last a quarter of a century.

Passing now to the manifestations that make the individual a patient, among the earliest must be counted lancinating and other pains. About a year ago I was consulted by a gentleman, 53 years of age, for "sciatica" and "chronic neuralgia," to which he had been a martyr for twenty-five years. Simply the history of these pains as obtained from statements of the patient was quite enough to determine the diagnosis, without eliciting another symptom or making an examination; and yet, as near as I could learn, a correct diagnosis had never been made. Although he complained of nothing else, the case was a typical one of locomotor ataxia, except that there were still traces of the knee-jerk. He had no incoordination. The pains of tabes do not always conform to the classical type—the severe, shooting or stabbing, intermittent, and irregularly periodical pains in the legs. They may possess the typical quality, but be located in the arms, trunk, or even head, in the last location closely simulating tic-douloureux. Very frequently the lancinating char-

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acter is wanting, the patient complaining of a prolonged burning or boring sensation that is often located in the region of a femoral condyle, on the outer surface of the leg, or about one malleolus of the ankle. Some patients complain merely of an excessively tired feeling, or a sensation of tension or an uneasy ache in the legs. In others, epigastric distress, a pseudointercostal neuralgia, or a feeling of intense unrest in some part, may constitute the first symptom noticed by the patient.

A large proportion of tabetics, estimated as high as 10 or 12 per cent, first seek the advice of a physician because of failure of vision due to atrophy of the optic nerve, and a striking peculiarity of many such cases is that the optic atrophy, once complete, ceases to progress, or progresses so slowly that the stage of incoordination is never reached. To these cases Dejerine has applied the striking if somewhat illogical designation, "tabes arrested by blindness."

Another symptom connected with the eye, which may appear so early as to be the first one to annoy the patient, is diplopia or ptosis. I think that fully 90 per cent of all paralyses of ocular muscles in adults may be referred to tabes, syphilis, or general paresis, and of these tabes is the most frequent cause of such paralyses.

In no inconsiderable number of ataxics the bladder is the first organ to be disordered. Within a few weeks I received from the same physician two ataxics who complained of nothing but an inability to retain the urine a normal length of time. The first was in fear of losing his position because of the frequency with which he was compelled to visit the urinal, and the second always retired with an elaborate system of linen and rubber diapers to protect his nightwear and the bedding. More frequent and earlier than incontinence or urgency of call to micturate is tardy action of the bladder. With full desire to urinate the patient has to wait and strain before he can start the stream, and even when started it is weak and irregular or intermittent, simulating to a certain extent the embarrassment of an enlarged prostate. Indeed, I have known ataxics to be treated for urethral stricture or prostatic disease, the true nature of the malady being overlooked on account of the prominence of the urinary difficulties. Almost as frequent as this slow action is a slight premature evacuation, probably caused by momentary relaxation of the sphincter of the bladder—that is, the subject has a call to urinate and promptly starts for the proper place, but before he can reach it loses a few drops of urine. Many of the cases have residual urine. Occasionally the rectum suffers earlier than the bladder, and the patient applies for relief of poor sphincteric control

or obstinate constipation. A feeling of fulness in the rectum with numbness in the anal region is frequent.

Of all the misleading symptoms of locomotor ataxia, none seems to be more uniformly deceptive than the gastric crises. They generally come early in the disease when other symptoms are undeveloped. They are, upon the face, so very far removed from uncertainty in walking, and the patient is so sure to have some dietary or stomachic explanation of the phenomena, that even old observers are sometimes caught unawares.

Occasionally tabes makes its apparent début by depriving the victim of sexual power, and still more rarely the patient notices numbness and anesthesia in the distribution of the fifth nerve.

It is not so very rare for tabes to announce itself by the appearance of a perforating ulcer of the foot, and as this lesion generally appears in connection with a corn or an unruly callus on the sole, it is often considered to be a purely local trouble, and the underlying spinal cord disease is overlooked.

In all cases, then, of pains, uneasiness, or numbness in the legs or elsewhere, failure of vision, ocular paralyses, bladder trouble, refractory constipation or rectal tenesmus, periodical vomiting or "bilious attacks," or even attacks of stomach pain without emesis, diminished sexual power, anesthesia of the face, indolent ulcer of the foot, and all cases in which the patient complains of weakness, uncertainty, or ready tire of the legs, it is incumbent on the medical adviser to examine for locomotor ataxia.

Passing now to the second question—for what is the examiner to look and by what is he to be guided in reaching a diagnosis?—it may be briefly answered in somewhat categorical fashion, as follows:

1. Loss of knee-jerk.

2. Reflex iridoplegia (the Argyll-Robertson pupil).

These two are *par excellence* the objective signs of locomotor ataxia, and any patient who has no patellar tendon reflex and whose pupils contract with accommodation, but not to light, is in all probability suffering with this disease.

3. History of lightning pains. The typical lancinating pains of locomotor ataxia are pathognomonic. They occur at irregular, generally rather long, intervals, and rarely last more than a day or two, generally a few minutes or a couple of hours. During their continuance they are distinctly but rapidly intermittent, the individual pain lasting only from a fraction of a second to a few seconds. But the typical pains in all their perfection are almost the exception rather than the rule, the atypical burnings, borings, and aches being quite as frequent, if diagnostically less pointedly significant.

4. Disorder of the vesical function—a relative retention, a relative incontinence, or both, as already described.

5. Analgesia of the legs. To examine the tactile sense alone is to make a grave error of omission. In the vast majority of cases sensation to touch in the lower extremities is intact until the disease is well advanced, whereas the perception of painful impressions below the knee is frequently blunted in the very early stages. Having learned that the patient is instantly aware of a touch which disturbs only the hair on the legs and never reaches the skin, to find that a pin may be thrust through a fold of integument without pain is somewhat startling, but it is not an unusual finding.

6. A history or other evidence of specific disease is of major importance, provided infection has not occurred too recently. The prominent rôle of syphilis in the etiology of tabes may now be considered as demonstrated, but tabes is not syphilis of the spinal cord, and does not, like syphilis of the cord, appear within the first years of the infection. As a rule, locomotor ataxia begins eight or twelve years after the chancre; its appearance within five years is exceptional, but a longer interval than twelve years is far from rare. I have now under observation a patient whose first symptoms of tabes were noticed twenty-five years after the initial sore of syphilis.

7. Ocular palsies, coming on suddenly, especially if more or less transient, are strong corroborative evidence of locomotor ataxia.

8. By far the greater number of cases of primary atrophy of the optic nerve are due to tabes, and this atrophy with one or two indubitable signs is quite sufficient for a diagnosis.

9. Very important in the way of confirmatory evidence are the various atypical pains and paresthesiæ, of which may be instanced numbness along the distribution of the ulnar nerve, in the legs and feet, in the perineal and anal regions or about the trunk, long-continued intercostal neuralgia, epigastric distress irrelative of meal-time or choice of food, and a feeling as if the rectum contained feces or a foreign body. In the case of a female patient recently examined, this rectal discomfort was the first symptom complained of, and was so urgent that she had been faithfully treated for rectal disease and uterine displacement, and was finally sent for operation to a gynecologist, who referred her to me.

10. In about 80 per cent of all tabetics a more or less complete zone of anesthesia may be discovered around the body at about the mammillary level. As this anesthesia of the trunk is very rare in other diseases, its diagnostic value is considerable. It is not, however, a very early sign.

11. Analgesia of the ulnar nerve is frequent in tabes, quite rare in the normal individual, and infrequent in all other diseases except general paresis. When, in the normal person, the ulnar nerve is forcibly pressed against the inner condyle or condyloid ridge of the humerus—a maneuver that is not difficult of execution—there is very considerable pain *at the point of pressure.* It is the absence of this pain which is diagnostic.

12. The peculiar normal testicular pain on pressure is said by Pitres to be absent in 75 per cent of the tabetics. I cannot confirm the figures, but I can attest the frequency of the symptom.

13. When present, fully developed gastric crises are almost pathognomonic and require but little confirmatory evidence. The same may be said of the typical arthropathies.

14. Diminished sexual power alone is of absolutely no value. An overwhelming preponderance of such cases are of psychic or local origin, and I have known a patient with locomotor ataxia preserve this function when he had incontinence of urine and feces, and his incoordination was so overwhelming that he could scarcely crawl. When psychic influences can be excluded sexual debility or impotence is of some diagnostic significance.

15. Before incoordination appears one can ordinarily demonstrate impairment of what is currently called the muscular sense, but what were better named sense of position or sense of motion—that is, the patient is unable to appreciate such slight passive movements of the toes or of an extremity as are at once perceived by the normal individual. This sense is naturally very acute, and the physician should know by experience how acute, before attempting to demonstrate its blunting as a sign of disease.

16. Ataxia. It may always be found by careful examination before the patient is aware of its presence.

17. Persistence of painful impressions, especially on the legs. For instance, a quick pin-prick or pinch is perceived as a long stinging or burning sensation. I am not sure that this symptom should not be placed higher on the list, as it is rather frequent—more frequent than delayed sensation—and very characteristic.

18. Muscular hypotonus—that is, muscles are unnaturally lax and flaccid. This may be shown by "doubling up" the patient, when it is frequently found that he can be flexed without inconvenience, until the face is almost between the legs. The muscles, too, are insensible to pressure.

VENETIAN BUILDING.

ACUTE FRONTAL SINUSITIS.

BY HENRY L. SWAIN, M.D., NEW HAVEN, CONN.

There is a general belief that acute inflammations of the accessory sinuses of the nose have been more frequent since the annual recurrence of influenza. My own impression is that involvements of the frontal sinus have been more frequent than acute trouble in any of the others. In 1897 there were in New Haven, during the winter and early spring, two small epidemics of influenza, and with that inexplicable faculty which this disease has of selecting certain parts, there was a large number of frontal sinus affections. Still more curious was the fact that there was an apparent localization to certain districts, or classes of people; twelve of these cases came to me from the practice of one physician, while several of my own cases and five referred by other physicians were subject to the same local influences. Among other cases were a number from out of town; evidently New Haven did not suffer alone. This sudden influx of so many cases naturally led to increased interest in this trouble.

The growing frequency of acute frontal sinusitis is shown by my case-books for the past twelve years. Excluding the last year, when there were so many, there is, year by year, a distinct increase; in the winter of 1896–97 there were three times as many as in the winter of 1892–93; previous to the first grip invasions, such inflammations were infrequent. If we continue to have yearly invasions of influenza, we may expect these local inflammations to increase. I do not imagine that my limited experience has wide application, but I infer that the upper air-passages, like certain individuals, seem to have a diminished resistance, caused by repeated attacks of influenza, and the future will see more sinus affections rather than less, unless the influenza vanishes as suddenly as it came.

The clinical history of these cases is about as follows: A patient, notwithstanding he feels badly, thinks that for such a trifle as a cold in the head he will not consult the family physician. He retires with his nose feeling stopped and with more pressure in his head than he has ever had before. Either then or in the night he suddenly feels an aching, perhaps first in the eye of the side affected. If accustomed to ocular headaches he thinks that this is the trouble. He is frequently awakened in the night by the pain in the head, and before morning is conscious not only that his head aches, but that the forehead over the eye is aching harder than the rest, and is

tender to pressure. By morning, or during the day, he frequently finds that the portion which aches hardest and is most tender is also a trifle swollen, reddened, and hotter than the other side. During the night he has been conscious that he was blowing more mucus from the nostril of the affected side, and that it is completely stopped. During the forenoon he is unable to work, and the slightest jar, stooping, or, if he has a cough, clearing of the throat, causes severe pain in the forehead. He cannot use his eyes, because of the marked watering, increased by use. Near work causes his head to ache harder. The discharge meanwhile has been increasing until along about ten o'clock, when it reaches a maximum. Between now and afternoon, slowly or suddenly, there is a marked decrease of the pain, preceded by a flow of a large quantity of thin pus or muco-pus, frequently colored with blood when the let-up has been sudden. With the subsidence of the excruciating headache the patient feels easier every way, and by late afternoon is commonly quite comfortable. He can even read a little, and slight jars do not disturb him. In fact, he feels so much better that he thinks the worst is over. He still has a bad cold in the head, feels feverish, and the affected side discharges freely. During the evening his confidence in his progress is somewhat shaken by occasional reminders, and before morning, or on rising, the same grinding headache is there with even more vehemence than on the previous day. His experience is now so severe that he seeks advice. If not, by afternoon he again has some relief, and sometimes without medical aid may go through several days of less and less aching, until the attack subsides, becoming soon but a disagreeable memory. Other cases seem to continue day after day with such agony that they are compelled to seek relief. Many unpleasant sequelæ of the acute trouble are to be found in neglected cases.

Of course, this typical attack which I have described may have any number of variations; oftentimes the ocular symptoms are so marked that an ophthalmologist is consulted, especially if the disease becomes subacute. The one-sided discharge is frequently ascribed by the patient, and even sometimes by the physician, to the natural flow of tears into the nose. Some severe cases have continued pain for days without the relief which commonly occurs in the middle of the day, and such cases are among the most unhappy. Some of these, indeed, may have absolute cessation of all discharge and may develop most alarming symptoms from pressure. Subacute cases are prone to a chronic discharge. The acute cases sometimes clear up with one sudden gush and a few days of increased discharge

from the affected side. In other cases we have prolonged symptoms due to the involvement of the ethmoid and maxillary sinuses. When the chronic pus-formation has once become established, there seems to be no limit to the length of time which it may exist, and complications are so liable to arise with the other sinuses that it is very rarely that we are called upon to treat only the frontal.

Some condition in the nose, or in the nature of the infection, determines why in one case there should be a frontal sinusitis as a complication of a simple coryza. How does the infection get into this out-of-the-way place? That none of the other sinuses are involved must be due to some anatomical peculiarity. There is at first a wide-spread congestion of the nose, and this undoubtedly always involves the mucous membranes lining the adjacent sinuses. The maxillary sinus is more frequently involved in acute processes than is commonly supposed, and it would not surprise me if systematic illumination of that cavity would show that in any severe cold with profuse discharge there is a congestion of that cavity. This is inferred by the poor transmission of light, which in the same individual is very different when the cold is gone. Supposing, therefore, that the congestion exists in the frontal sinuses, it is reasonable to suppose that they are frequently equally congested, and yet one gets infected and the other does not. Presumably the variations in the outlet may account for a particular sinus being affected. My own observations show the inflamed nostril to be different from its fellow; it is almost always narrow in the upper part, or there is malformation or absence of the middle turbinate, or hypertrophies or polyps exist, which act as favoring causes. Without putting it too strongly, it has seemed that in every case some lesion was present which narrowed the outlet of the frontal sinus, or there was modification of the canal itself. No two of these passages are alike, and all degrees of patency seem to exist in subjects who have remained healthy. Disease of the middle turbinate region may create foci of infection near the opening of the canal, easily leading to congestion of the interior of the sinus, and increased secretion. If this cannot readily escape, pus results, and then follows the clinical picture which I have described. I have never seen a case of frontal or other sinusitis previous to the formation of pus; unless infection actually takes place, neither the patient nor his physician is cognizant of the trouble. Retained secretions cause pressure, and this leads to venous stasis of the surrounding membrane in the nose. This swells, thickens, and granulation tissue, and perhaps polyps, form, where previously nothing but simple hypertrophy existed.

This new tissue blocks the canal still more, and thus an effect becomes a further cause.

How much microorganisms have to do with the affair I am not in a position to say, but this much is certain: nasal mucus is secreted sterile, and the first effort of nature seems to be to throw out large quantities of it. Microorganisms present are thus washed out. With retention the germs multiply, and then we have mucopus and pus. Should the infection of the mucus take place near the opening of the sinuses, it readily infects these remote parts of the nose. The discharge from sinuses is always purulent and hence contains microorganisms. Before leaving this point, I wish to emphasize the fact that germs cannot by accident find themselves way up inside the frontal sinus. The cause must lie in the existence in the neighborhood of the opening of that sinus of some pathological or anatomical condition favorable to the development and propagation of these organisms. From this comes the eminently plain deduction that prophylaxis must lie in the removal of such conditions.

It has been mentioned that the secretion is more abundant at certain times of the day. This is not only because the outlet is sometimes free, but there is actually more secretion formed in the sinus at one time than another. In chronic cases of empyema of the maxillary sinus, the patient will find no pus in the antrum upon washing it out in the afternoon. In the morning there may be none, but by noon enough will have been formed to fill the cavity and overflow into the nose. This same thing happens in acute cases, and I believe this explains, apart from the actual stoppage of the canal, why in cases of acute frontal sinusitis the morning pain is frequently so intense. The only explanation of this phenomenon which suggests itself is that at night all metabolism and cell reproduction is lessened by the slowed circulation during sleep. Greater activity of circulation causes an opposite condition, so that after the individual has been up and moving about for two or three hours there is a pronounced increase in the amount of pus. Whether this circulatory theory is true or not, this increased discharge, in the case of the frontal sinus, must go through the same opening through which a smaller amount has been passing, and consequently there must be retardation of the flow, and pressure. This explains the sudden periodical increase of pain. We are dealing with a membrane where there is erectile tissue, and the ebb and flow of blood cause a change of volume; a granulation which merely impeded the flow of pus would, in an engorged condition of the

membrane, act as a ball valve, for the time being completely blocking the exit.

Fluid poured in through a hole in the front wall of the frontal sinus finds its way almost invariably into the maxillary sinus. Every case of frontal sinusitis is liable to an inflammation of the antrum of Highmore. The only thing which prevents such an accident is the swelling of the tissues, cutting off the antrum from the rest of the nose.

The diagnosis of such cases as we have under consideration is usually easy. One-sided headache, tenderness, redness, and swelling of the frontal region near the root of the nose, with a one-sided mucopurulent discharge, indicate frontal involvement, if nothing more. Confusion may arise from the fact that occasionally a discharging maxillary antrum may be accompanied by frontal headache, even in the chronic state, or such symptoms may coexist with supraorbital neuralgia. A median headache may accompany ethmoid trouble. If tenderness is under the orbital ridge quite close to the nose, it is safe to assume that we have to do with a frontal sinusitis. Examination of the nose will usually show that pus is present and that it tends to come from the front part of the middle turbinate region, and occasionally one can see it actually flowing from the region of the outlet of the frontal sinus. The only certain sign is to see pus flow into the nose following the probe which has been introduced into its natural opening.

The prognosis, with treatment, is good, and where it is possible to remedy predisposing causes or conditions we can promise fair immunity from subsequent attacks. Frequently without treatment the case will get well, due to the fact that the drainage from the cavity is good when once established, whether by nature or by art.

Our treatment is plainly indicated. First relieve the general constitutional conditions by the usual methods, and never fail to reduce the trend of blood to the head. A saline cathartic is almost always indicated. Locally, try to keep the nostrils free from mucus or pus and to secure the freest possible drainage. Cleansing with fluids is valuable, both from the flushing which their use involves and also from the heat itself. Flood the nose with hot normal saline solution, preferably by snuffing it up. Hot water externally over the sinus, in hot-water bags or hot-water coils, is beneficial. If seen early, ice may abort a serious inflammation. The earlier the bloodletting takes place, the better; it may be local in the nose, or by leeches externally. If the nostril is tightly stopped, spraying with Seiler's tablets in solution following the hot salt douches

cleanses and reduces swollen turbinates. Cocaine, because it contracts erectile tissue, can be used by the physician in extreme cases, but it should rarely, if ever, be used by the patient himself; it will help in establishing patency of the nostril. First use the cocaine in small amounts, following it closely by aqueous extract of suprarenal glands. The latter the patient can take with him, and by repeating its use can keep a nostril open to its maximum for a number of hours. The greatest possible widening and freeing of the nostril by the shrinkage of the turbinates follow the combined use of cocaine and extract of suprarenal capsule. While the patient is under the influence of both, the medical attendant can frequently relieve the distress immediately by probing into the frontal sinus canal. This is usually practicable, and when repeated daily gives the patient great comfort. The probing usually reveals, sooner or later, granulations, hypertrophies, or polyps. These, if present, should be removed at the first sitting with a sharp spoon, scooping out all the granulation tissue about the opening of the canal.

By following a routine in keeping with the above suggestions, the patient can keep himself in as comfortable a condition as is consistent with the severity of the case. He may, in addition, get considerable relief by the insufflation of a small quantity of dry boric acid. It will keep the discharge fluid and prevent retarding of the flow from the sinus. Patients should repeat the cleansing process every three or four hours, and should be seen daily.

When the headache is unbearable, medicinal treatment is called for. Rarely in acute cases, and then usually in only what are acute exacerbations of a chronic trouble, is one called upon by the severity of the symptoms, such as threatened meningeal trouble, to make an artificial opening. This may be done by trepanning the front or lower wall, breaking down impediments and providing free drainage into the nose. Scrape out the diseased tissue within the sinus, insert a drainage-tube of soft rubber through the infundibulum into the nostril, and close the external opening. Frequently it heals without serious trouble.

If I have aught to say in summing up this somewhat lengthy description of a severe disease, it is to encourage local treatment. I think we can accomplish quite as much to relieve these cases and make the patient comfortable as it is possible to do in any distressing acute inflammation.

GENERAL SURGICAL ANESTHESIA AND ANESTHETICS.[1]

BY ERNEST J. MELLISH, M.D., CHICAGO, ILL.

The subject of surgical anesthesia and anesthetics is so vast, the views so diversified and conflicting, and so much has been written, that it would require a good-sized book to even index the literature. It is my purpose to deal with the more practical parts of the subject, only touching upon such portions of the laboratory findings and theoretic deductions as seem to be of especial value in arriving at practical conclusions.

Since in the present state of our knowledge our choice of anesthetics usually lies between ether and chloroform, or their mixtures, it becomes necessary to consider the effects of these substances on the human economy.

Effects During Anesthesia.—It is generally believed, at least by American surgeons, that ether causes death by its paralyzing effect upon the respiratory system, and chloroform by a similar effect upon the circulatory system.

The Hyderabad Commission (I refer to the second commission, superintended by Dr. Lauder Brunton) concluded from its experiments on animals that chloroform kills by its effect upon the respiratory system; and in its report it recommends that the respiration and not the heart be watched for danger-signals. In common with hundreds of others, I do not believe the experiments of the Commission prove its conclusions. In other words, I believe that chloroform almost invariably exerts its bad effects primarily upon the circulatory system. These systems are to a great extent interdependent, consequently what affects one will to a considerable extent affect the other. This fact probably accounts in a large measure for many erroneous interpretations of anesthetic narcosis phenomena. In reading the hundreds of reports of death from anesthetics, one cannot but be impressed with the evidences of inaccurate and unscientific observations in the great majority of them. Indeed, the circumstances are trying, and even experts are apt to overlook certain symptoms, because attention is concentrated upon efforts to resuscitate the patient.

Leonard Hill shows that there are two forms of chloroform syncope—primary and secondary—both forms being due to circulatory depression. Practically all observers agree that chloroform causes lowering of blood-pressure at all stages of the anesthesia.

[1] Prepared by invitation for presentation to the Kansas Medical Society, at Topeka, 1899. Read before the Chicago Medical Society, Oct. 11, 1899.

The tracings of the Hyderabad Commission show that blood-pressure falls greatly before respiration ceases, but the Commission claims this has nothing to do with the heart, and that failure of respiration is the primary cause of death. If this be true, says Hill, artificial respiration should be successful always, for if the respiratory center be excised an animal can be kept alive for hours by means of artificial respiration. Other physiologists confirm this view. Lessening of blood-pressure is attributed partly to vasomotor paralysis and partly to cardiac failure. In rapid administration of an anesthetic the circulatory organs are in danger, and in slow administration the respiratory. Ether produces a slow fall of blood-pressure, and chloroform a rapid.

Hill, in an article on the causation of chloroform syncope (*British Medical Journal*, April 17, 1897), concludes in part:

1. Chloroform causes primary failure of circulation and secondary failure of respiration. The respiratory center fails to act, partly because of anemia produced by the great fall in arterial tension. This statement is proved by the fact that the activity of the respiratory center can be restored by raising the arterial tension. The depth of anesthesia and the paralysis of the respiratory center depend upon the primary fall of arterial tension.

2. Chloroform more than any other agent known rapidly abolishes the mechanisms of the vascular system which compensate for the hydrostatic effects of gravity.

3. Chloroform abolishes these mechanisms by paralyzing the splanchnic vasomotor tone, and by diminishing the power of the respiratory pump. When these mechanisms are entirely destroyed circulation is impossible if the patient is in the feet-down position.

4. Chloroform produces paralytic dilatation of the heart, acting like amyl nitrite on the musculature of the entire vascular system.

5. There are two forms of chloroform syncope—that occurring during primary anesthesia, and that occurring during prolonged anesthesia. In the syncope which occurs during primary anesthesia the patient struggles, holds the breath, raises the pressure within the chest, congests the venous system greatly, lowers arterial tension, and finally makes several deep inspirations, thus charging the lungs with chloroform vapor. In the first stage the left heart becomes impoverished, and in the second stage it suddenly fills with blood. This blood is drawn from the lungs and is saturated with chloroform. It passes into the coronary arteries, and the heart is quickly thrown into paralytic dilatation. Respiration and pulse cease simultaneously, or the pulse ceases before respiration. The

syncope which occurs during prolonged anesthesia arises from gradually giving chloroform beyond the safe limit. The arterial pressure diminishes more and more and the respiration ceases secondarily, because of anemia of the respiratory center. The heart is not paralyzed by chloroform in these cases, because it is taken in gradually by the shallow respirations and is distributed slowly by the feeble circulation.

6. A patient can be resuscitated from the second form of syncope by artificial respiration and the horizontal posture.

7. Artificial respiration carried out with the patient in a horizontal position is the treatment indicated primarily in the first form of syncope. The heart must be rhythmically compressed by squeezing the chest. If these maneuvers do not quickly cause the pulse to appear, the patient should be placed in a vertical position with the feet down. The dilated right heart is thus completely emptied, artificial respiration is continued during this change of posture, and the patient is brought again into the horizontal position. By rhythmic compression of the chest circulation is maintained through the coronary arteries. If this maneuver fails in the first trial it is repeated.

8. Placing the patient in the feet-up position or compressing the abdomen will simply increase paralytic dilatation of the heart. In other words, in syncope occurring during primary anesthesia both of these methods of treatment do harm rather than good.

9. Shock or fear acts like chloroform in tending to abolish the compensatory mechanism for the hydrostatic effects of gravity, and giving the patient chloroform may be the last straw which completely paralyzes the circulation.

10. Pneumogastric inhibition of the heart is of no importance as an agent in the causation of chloroform syncope.

11. Ether is a vastly safer agent for anesthesia than chloroform (according to Ringer fifty times less dangerous).

In the writer's estimation these conclusions are well founded. It seems rational to suppose that chloroform (and other anesthetics as well) acts upon all parts of the economy, interfering profoundly with metabolism, perhaps especially with that of the blood and of the nervous system. The experiments of Paul Rosenberg (*Berlin. Klin. Wochenschr.*, Jan. 7, 1895) and those of Guerin, of Paris, led these observers to conclude that arrest of breathing and depression of heart function are not due to the action of chloroform in the blood, but are true reflex phenomena. Their experiments were made upon rabbits tracheotomized so that they could be made to

breathe by the nose alone, by the tube alone, or by the nose and tube at once. Inhalations by the nose temporarily arrested breathing and produced kymographic tracings indicative of depressed cardiac action. Inhalations through the tube had no perceptible effect upon either respiration or the circulation. After cocainizing the nasal mucous membrane, inhalations by the nose did not arrest breathing nor depress the heart. When the vagi were cut, nose inhalations were without effect on the heart or respiration. Guerin recommends that the nose be closed during the production of anesthesia by chloroform; and Rosenberg advocates cocainizing the nasal mucous membrane, as suggested by Laborde in 1890. Both maintain that under these circumstances chloroform is the safest anesthetic. I apprehend that few careful observers will question that cocainizing the nasal mucous membranes as a preliminary to general anesthesia is dangerous practice.

Such experiments are interesting and of considerable importance, as indicating a line for extensive clinical research; but I do not think we can accept the conclusions arrived at based upon these experiments alone. The apparent effects of an anesthetic vapor on a rabbit and the actual effects upon a human being may be very different things. One should expect an animal to cease breathing when a noxious vapor is forced upon its nostrils; and, if it ceased to breathe, certainly the cardiac action would be somewhat modified. The process is that described by Hill as primary syncope. It is not the condition invariably met with early in anesthesia, as exceptionally we may have vasomotor and respiratory paralysis instead of cardiac.

It is interesting to note that in one year, of forty-one recorded deaths from chloroform syncope, thirty-nine occurred during the primary stage of anesthetization and before the surgeon had touched the patient.

Ether.—The physiologic effects of ether are much like those of chloroform, but with some well marked variations. Primarily ether causes increase in the force of the heart and raises arterial tension. It causes capillary dilatation, thereby insuring ample supply of blood to the nerve centers. Unlike chloroform it commonly produces death by paralysis of the respiratory center; exceptionally death occurs from syncope. Compared with chloroform it produces more irritation of the lungs. Excepting locally on the lungs and contiguous mucous surfaces, it is questionable if its effects are as deleterious on the tissues as are those of chloroform.

Temperature Changes During Chloroform Anesthesia. — Andrea

Ceccherelli (*Il Policlinico*, Nov. 17, 1895) finds that the temperature is subnormal, though not progressively so, to the end of anesthesia. The lowering of temperature oscillates most at the beginning of narcosis. When it touches its lowest point it oscillates about this point, and the more the oscillations are in relation with strong pulse and good respiration the less is the danger to life. The temperature begins to rise when narcosis is terminated. The longer the narcosis the lower the temperature and the longer in recovering to normal.

It is probable that the temperature oscillates similarly in ether anesthesia, since ether often causes a depression of temperature to the extent of over 3° F.

Dudley P. Allen (*American Journal of the Medical Sciences*, cxiii, 298) arrives at similar conclusions. He found that lessening of blood-pressure corresponds closely to loss of heat; that loss of heat may to a great extent be prevented by covering the animal and by surrounding it with hot bottles; and that temperature may sometimes be actually increased during anesthesia under these circumstances. After ether the lower temperature rapidly returns to normal, but after chloroform or the A. C. E. mixture the temperature continues to fall for some time after administration has ceased.

After-effects of Anesthetics.—By this is understood the conditions which become manifest from the time of awakening from the anesthesia until either recovery or death. According to Fraenkel, Ambrosius, Mathen, Bastianelli, and Heintz (quoted by D. N. Eisendrath, *Chicago Medical Recorder*, June, 1897), fatty degeneration and fragmentation of the heart muscle occur in quite a proportion of cases after chloroform anesthesia; and a number of observers found the same changes in animals after chloroform anesthesia. No such cases have been reported as occurring from ether inhalation, and no such changes could be found in animals after extensive experimentation. Coagulation necrosis and fatty degeneration of the liver cells occur in not a few cases after chloroform anesthesia, as mentioned by Eisendrath, and established by Fraenkel, Ambrosius, Bastianelli, Heintz, Nachod, Mathen, and Guthrie.

As to the after-effects of ether and chloroform on the kidneys the testimony is somewhat conflicting. Fraenkel called attention to the fact that chloroform sometimes gives rise to fatty changes in the kidneys from which death may result, and other observers have reported cases of this sort. I have observed at least one case which seemed to be of this class. It was that of a young man who was subjected to a brief chloroform anesthesia for thoracotomy for empy-

ema. Three or four days thereafter he died, apparently from acute nephritis, and his kidneys were found in a condition of cloudy swelling with fatty degeneration. So far as the empyema was concerned he appeared to be doing well. It is hardly fair, perhaps, to attribute the conditions found in all these cases entirely to the anesthetic.

Eisendrath reports that, including 130 observations of his own, albumin has been found in 15 per cent of 650 cases after chloroform, and in six per cent of 1500 cases after ether, where none had been present before. Casts were found unaccompanied by albumin more frequently after ether. In over one-half of the cases there were casts where no albumin was found. Casts and albumin disappeared rapidly, more so after ether than after chloroform.

Wunderlich found from investigations on 125 cases, before and after administration of anesthetics, that albumin when present was increased by ether but not by chloroform; that albuminuria may be caused by ether or chloroform, but oftenest by chloroform; that casts when present will be increased in number by ether; and that casts are caused oftener by chloroform than by ether. He says ether nephritis does not occur, but chloroform nephritis does. The statistics of Carl Beck, of New York, show that out of 300 non-albuminuric cases given ether, twenty-seven subsequently had distinct amounts of albumin in the urine. Trieber and Roux failed to find albuminuria in a single case out of several hundred examined. Blake found that in thirty-six out of fifty cases ether produced albuminuria or increased an existing albuminuria. In seventy cases of chloroform anesthesia reported by Patein, 12 per cent showed albuminuria before anesthesia, 15 per cent during anesthesia, and 73 per cent after anesthesia. The albumin disappeared within two days as a rule, and the length of anesthesia seemed to bear no relation to the production of the albuminuria. Körte found albuminuria six times in 600 ether cases, and Butler once in 500 cases. W. W. Thompson and R. C. Kemp, of New York, recently conducted a series of experiments on animals (*Medical Record*). They found, by means of Roy's oncometer, that ether produces a contraction of the renal arterioles, with consequent shrinkage of the kidney in bulk, accompanied by diminished secretion, marked albuminuria, and finally suppression. The general arterial circulation was stimulated throughout the anesthesia, as shown by the manometer. Chloroform did not seem to affect the kidneys, as the albuminuria when present was so slight that they attributed its occurrence to respiratory interference. The secretion

of urine continued up to the last moment of life. The action of chloroform on the heart was shown to be distinctly depressing. The effects of A. C. E. mixture were those of ether on the kidneys and of chloroform on the heart. The same was the case with Schleich's anesthetic solution, but the effects were more pronounced than with A. C. E., apparently showing that even more of the anesthetic is absorbed than is the case with either anesthetic administered alone. This is contrary to Schleich's theory regarding the absorption of anesthetics. Robert F. Weir (*New York Medical Journal*, Nov. 16, 1895) believes that ether has no marked effect upon healthy kidneys, that it is safe in persons with slight kidney disease, and that circulatory disturbance which may arise in the kidneys quickly subsides.

There can be no question that if the patient is allowed sufficient fluid before and after anesthesia many of the unpleasant and dangerous sequelæ will be avoided. When water cannot be taken per os it can be given per rectum or hypodermically. *Favor elimination in all possible ways.*

Considering the various conditions under which anesthetics are given and the diversity of methods of administration, no uniformity in results or opinions should be expected.

Choice of an Anesthetic.—In order to receive favorable comparative consideration, an anesthetic should possess these qualities: Immediate and remote safety; least disagreeable to take; best calculated to quickly produce and maintain muscular relaxation, followed by the minimum of ill effects, as vomiting, depression, catarrh, etc.; minimum influence on the question of hemorrhage; best adapted to the prevalent characteristics of the individual case.

For the first ten years of my practice I was a consistent advocate of chloroform. While admitting the greater immediate danger from the administration of chloroform, I believed that the remote deleterious effects of ether, compared with those of chloroform, more than counterbalanced the primary safety of ether. I always used chloroform save where contraindicated. During the past three years, or since carefully conducted observations have apparently demonstrated that chloroform is followed by at least as much remote danger as ether, I have employed ether as the chief anesthetic in all cases where not especially contraindicated, sometimes using chloroform to produce unconsciousness and maintaining narcosis with ether.

It appears to me that the ether advocates have the best of the argument. Ziegler (*Münch. Med. Woch.*, Nov. 23, 1895), who has recently become an ether advocate, holds that many usually

noticed unpleasant effects can be avoided by skill in administration; that ether is less dangerous than chloroform, because cardiac failure, though it may occur, is secondary to respiratory failure, which latter condition gives fair warning. The French surgeon, Chaput, prefers ether because it is safer than chloroform; it strengthens the heart; it rarely causes vomiting; it injures the kidneys less; it can be given by a comparatively unskilled anesthetist; patients revive more quickly than with chloroform.

Poncet has used ether in some 24,000 cases with one death. He believes the danger is from asphyxia (has performed tracheotomy successfully four times for the relief of ether asphyxia).

Mollison (*Intercolonial Medical Journal*, Australia, Aug. 20, 1896) reports autopsy notes of eleven cases of death during chloroform administration, nine of which could be properly attributed to the anesthetic. In these nine cases the heart was either fatty or dilated, yet Mollison says that in only one was there any evidence that primary cardiac failure was the mode of death. In all the others the evidences of asphyxia (such as congestion of the lungs and trachea, for example) were more or less marked. In the same journal (Feb. 20, 1897) he reports autopsy findings in two more cases. In one case he attributes the death to cardiac failure, "although the slight congestion of the lungs and trachea suggests an element of asphyxia. In the other case death was due to partial asphyxia overcoming cardiac power in a heart dilated and degenerated from a continued fever."

The first thing that strikes one on reading these reports is the large number of autopsies obtainable from a relatively small number of anesthesias. And one is forced to question his deductions. Patients with dilated or weak hearts are very apt not to breathe well, because of the consequent pulmonary engorgement. Another thing to be borne in mind when considering reports on anesthesia in warm climates is that they are almost *obliged* to use chloroform, because the high temperature causes too rapid evaporation of ether. The Hyderabad Commission reported that it was almost impossible to give sufficient ether to an animal without producing asphyxia, on account of the rapid diffusion of the agent. Similar difficulty is experienced in high altitudes. Perhaps cases of apparent or real asphyxia from chloroform administered in warm climates are chiefly due to the necessary pushing of the anesthetic.

William E. Burton, of Dublin, calls attention to the narrowness of the safety margin between sufficient chloroform for anesthesia and the lethal dose, or between the dose for sufficient and that for insufficient anesthesia.

Treves (*Practitioner*, London, October, 1896) believes that in general ether is safer than chloroform. He does not think the objection urged against ether, that it produces venous engorgement and consequently leads to much oozing from the field of operation, well founded, the question being chiefly one of administration.

My own reasons for preferring ether to chloroform in general may be stated briefly thus: Ether is much safer for indiscriminate use, in that most physicians who administer anesthetics are relatively unskilled in their use. In order to reduce the bad effects of an anesthetic to the minimum it must be skilfully administered; and when the anesthetic is badly given the dangers from chloroform are very much greater than those from ether. If all anesthetics could be administered in hospitals under the guidance of experts, then perhaps the margin of difference in safety between ether and chloroform would be much smaller than it is now. Ether kills slowly, by its effect on respiration, and generally gives ample warning of danger, since the heart continues to beat long after respiration ceases. Chloroform kills quickly by its effect upon the circulation, and is very apt to afford no warning of danger. Ether is safer in healthy persons than in the weak and prostrated, while chloroform is little less dangerous in the vigorous than in the debilitated. Treatment usually promptly overcomes unfavorable symptoms from ether, and often does no good in those from chloroform. Ether is the safest general anesthetic known so far as its immediate effects (and probably its remote also) are concerned. Public opinion in this country is overwhelmingly in favor of ether as compared with chloroform, hence if an accident happens with ether the surgeon is much more likely to escape blame (Gay).

Machine methods in the selection of an anesthetic are bad. We should select the anesthetic for the individual case, according to the conditions present. While in general ether is the safest anesthetic, there are exceptions, which can usually be recognized. It is generally believed that in the very young and the very old, and in those prone or subject to acute bronchial affections, ether should not be given. Perhaps this is the safest rule for the general practitioner to follow, but with the careful expert accustomed to giving anesthetics in scores or hundreds of cases each year, I think there are few cases where ether will be more dangerous than chloroform. The latter anesthetic should not be given where the heart is dilated or very weak structurally.

It is reported that in Professor Shorburgh's clinic in the Julius Hospital at Würzburg, Bavaria, iced chloroform has been adminis-

tered in over 14,000 cases without an unpleasant result. The advantages claimed are quickness of action, comparative safety, and absence of postanesthetic nausea and depression.

OTHER ANESTHETICS.

Nitrous Oxide.—Formerly it was thought that the anesthetic effect of nitrous oxide was due entirely to its exclusion of oxygen —in other words, that it was purely an asphyxiant or false anesthetic. It is now known to be a true anesthetic substance, and can be given with an admixture of air or oxygen, with the result of producing peaceful anesthesia without the presence of asphyxial phenomena.

Frederick W. Hewitt (*British Medical Journal*, Feb. 18, 1899) has reported his observations on the effects upon the human being of pure nitrous oxide, of definite mixtures of nitrous oxide and air, and of nitrous oxide and oxygen, basing his observations upon 231 cases, as follows: Pure nitrous oxide, 22 cases; nitrous oxide mixed with different percentages of air, 107 cases; nitrous oxide mixed with different percentages of oxygen, 102 cases. He concludes that when nitrous oxide is administered without the admixture of free oxygen the anesthetic phenomena are in their essential features very similar to those of ether or chloroform; that the most conspicuous of the asphyxial phenomena are embarrassed and deeply stertorous breathing, cyanosis, and anoxyemic convulsion. Other, less obvious, asphyxial phenomena are dilatation of the pupils, swelling of the tongue and adjacent structures, and rapid cardiac action. All these may be eliminated or greatly modified without interfering with the anesthetic effects of the gas by administering with it certain proportions of oxygen either pure or atmospheric. If the administration be pushed far enough breathing becomes arrested by obstructive stertor, by anoxyemic convulsion attacking the respiratory muscles, or by both conditions combined. Paralytic cessation of breathing is very rare, and when it occurs is dependent quite as much upon cerebral anemia from defective circulation as upon the presence of unoxygenated blood in the vessels supplying the respiratory center. The deep and obstructive stertor of pure nitrous oxide narcosis is not met with when employing mixtures containing moderate percentages of air or oxygen, and when the percentage of oxygen is considerable—30 per cent air or 13 per cent of oxygen—respiration becomes noiseless and free from obstruction. The most marked cyanosis appears when very small percentages of air (three to six per cent) or oxygen (under three per cent) are admixed. With

pure nitrous oxide cyanosis may not have time to become pronounced, for the administration may be cut short by deep stertor. With 30 per cent of air cyanosis is very slight, and with 11 per cent of oxygen it disappears altogether. Anoxyemic convulsion, like cyanosis, is liable to be greater with small percentages of air or oxygen than with pure nitrous oxide, but with 30 per cent of air or 6 per cent of oxygen it ceases to occur. Reflex and excitement movements are most apt to arise either with pure nitrous oxide or with admixture of small percentages of air (three to seven per cent), or with considerable percentages of air (20 to 30 per cent) or of oxygen (10 to 20 per cent). They are least apt to occur with mixtures containing moderate quantities of air (12 to 16 per cent), or of oxygen (three to seven per cent). The duration of available anesthesia after inhalation was found to be longest after administration of mixtures containing from 3 to 11 per cent of oxygen, the maximum having been obtained with seven-per-cent mixture. With nitrous oxide and air mixtures the anesthesia was distinctly longer than with pure nitrous oxide, but the results were very uncertain. The shortest available anesthesia was with nitrous oxide alone, and with nitrous oxide containing 30 per cent of air. The investigation shows that the best results were obtained with mixtures of nitrous oxide and oxygen; the next best with nitrous oxide and air; and the worst with pure nitrous oxide. Hewitt continues:

"There is no one mixture of nitrous oxide with air or with oxygen which will successfully anesthetize every patient.

"In order to obtain the best form of anesthesia oxygen should be administered with nitrous oxide by means of a regulating apparatus, the percentage of the former gas being progressively increased from two or three per cent at the commencement of the administration to seven, eight, nine, or ten per cent, according to the circumstances of the case. The longer the administration lasts the greater may be the percentage of oxygen admitted.

"The next best results to those obtainable by means of a regulating apparatus for nitrous oxide and oxygen are to be secured by administering certain constant mixtures of these two gases. Mixtures containing five, six, or seven per cent of oxygen are best for adult males; and mixtures containing seven, eight, or nine per cent are best for females and children. The next best results to those last mentioned are to be obtained by means of mixtures of nitrous oxide and air, from 14 to 18 per cent of the latter being advisable in anesthetizing men, and from 18 to 22 per cent in anesthetizing women and children.

"Paul Bert . . . regarded an increased atmospheric pressure as essential to the production of anesthesia by means of these gases. It is clear, however, from the foregoing investigation that deep and satisfactory anesthesia, unaccompanied by any obvious asphyxial manifestations, may be secured, at ordinary pressures, by mixtures of nitrous oxide and oxygen containing even as much of the latter gas as is present in our atmosphere.

"The last mentioned fact would seem at first sight to give a death-blow to the asphyxial theory of nitrous oxide anesthesia—a theory which supposes that this gas produces its anesthesia by limiting or arresting normal oxidation processes within the central nervous system. But are we justified in assuming that because no obvious asphyxial manifestations make their appearance during the inhalation, no such interference with oxidation is taking place?"

Herbert J. Preston, senior assistant anesthetist, St. Bartholomew's Hospital, London, has administered pure nitrous oxide—allowing occasional breaths of pure air—in nearly 200 cases, the anesthesias lasting from ten to fifty minutes, and he avers no disquieting symptoms were observed. After administering nitrous oxide and oxygen mixed in nearly 150 cases, the anesthesias lasting from fifteen to sixty-five minutes, he concludes that the mixture is better for anesthesia than the pure nitrous oxide. He observed no bad effects and very little nausea (sometimes one emesis).

W. E. Casselberry and F. Menge, of Chicago (*Journal of the American Medical Association*, March 5, 1898), recommend nitrous oxide and oxygen in tonsil and adenoid operations, claiming the following advantages: First, the absence of danger; secondly, no preparation whatever is necessary; thirdly, the upright position usually desired may be safely assumed; fourthly, hemorrhage seems in no way to be affected by it; fifthly, the time of the whole proceeding is greatly lessened, from an hour and a half to as many minutes; sixthly, the after-effects, the vomiting and retching, are entirely obviated, and the patients may be safely removed to their homes within fifteen minutes. They admit these disadvantages: First, somewhat cumbersome apparatus required; secondly, greater number of assistants desirable; thirdly, haste with which it is necessary to operate.

As to the most important claim made, the absence of danger, I think few will agree, since no known anesthetic is without danger. I can say nothing about nitrous oxide from practical experience, for I have not employed it. It certainly is not suitable for general use, on account of the difficulty and expense of keeping it on hand, and

of the necessity for cumbrous apparatus for its administration, not to mention the uncertainties as to duration and completeness of the resulting anesthesia. Except in dentistry it is still in the experimental stage. In dentistry it is doubtful if the reported deaths from this anesthetic would amount to one in a million anesthesias.

Ethyl Bromide, *Hydrobromic Ether* ($C_2H_5Br.$), produces an anesthesia similar in duration to that of nitrous oxide, though somewhat longer. As it is decomposed on exposure to air, light, or dampness, it is now furnished in hermetically sealed tubes, each tube containing sufficient for a dose. The usual dose for a child is twelve grammes (three drachms), that for an adult twenty-four grammes (six drachms). It is administered with a closed mask or the ordinary towel ether-cone. "The whole quantity should be poured into the mask at once, and the mask applied over the nose and mouth so as to exclude air." Narcosis is complete in from thirty to sixty seconds and lasts two or three minutes. As with nitrous oxide, this anesthetic is administered with the patient sitting upright. Obviously it is available only for short operations. Although a number of deaths have occurred under its use, there are surgeons of experience who consider it a perfectly safe anesthetic "when properly administered." I for one prefer to await further experimentation with it by those who are willing to assume the risks attending its use, although in my limited observation of its employment in adenoid operations it has worked admirably, save that the postanesthetic disturbance often causes inability to walk for several hours.

Pental is mentioned only to condemn. But a few thousand anesthesias have been reported, yet the death list is not small.

Intraspinal Injection of Cocaine for the production of general anesthesia has been tried by Bier, of Kiel (*Deutsche Zeitschrift für Chirurgie*, April, 1899). Cocaine 0.005–0.01 gramme ($\frac{1}{12}-\frac{1}{6}$ grain) is injected in small quantities into the spinal canal after the manner of Quincke's lumbar puncture. Anesthesia, below the nipple line only, is complete in seven to eight minutes. Pain sense is obliterated for about three-quarters of an hour, while thermal and tactile senses remain normal. Major operations, like joint resections, necrotomy, etc., have been performed under this method of anesthesia. Some hours after the injection nausea, vertigo, and severe headache are experienced, due probably to disturbance of the central nervous system. Bier and one of his assistants submitted themselves to the injections.

It would seem a safe prediction that this method of anesthesia

will never become popular in either hospital or general practice. Its dangers and limitations are obvious.

Hypnosis for production of anesthesia has been employed for many years, several hundred painless capital operations having been performed under hypnotic anesthesia. However, this method of producing anesthesia is uncertain, in that the hypnotic sleep cannot be induced in all individuals; and even susceptible subjects must be subjected to a series of daily hypnotizations before operation. For various reasons it seems doubtful whether this method of producing anesthesia should ever be employed. Moreover, it is not free from danger, since death may occur during hypnosis.

Statistics.—The statistics of deaths from anesthetics cannot be relied on as indicative of the actual dangers encountered. They represent the deaths only and not the narrow escapes. In this country it is probable that not half the deaths from anesthetics are reported. I have seen four deaths on the table from anesthetics, and so far as I know not one of them was reported. Three of these deaths were from chloroform and one from ether, all in the hands of men considered as competent. In considering the statistics we find that the personal equation is of the greatest importance. One man will have 15,000 chloroform anesthesias, with only one death, while another will have three deaths in less than a thousand cases. One selects his cases for chloroform, while another gives it indiscriminately. One administers an anesthetic carefully by the "open method," another gives it carelessly by the "closed" or the "smothering method." One thing is certain, a great many deaths occur during and after anesthesia from the effects of the anesthetics. And it is notable that by far the greater number of deaths are reported from localities where chloroform and complicated inhalers are extensively used. The files of the London *Lancet* and of the *British Medical Journal* of the past few years contain an appalling array of testimony as to the danger of anesthetics. I quote from an article in the *British Medical Journal*: "In a certain institution in Great Britain, in the course of a recent year, there were, out of some 3000 or 4000 administrations, no fewer than twelve fatalities from chloroform." Taking the higher number, 4000, of anesthesias, this means one death to every 333 administrations.

German statistics for the past eight or ten years show deaths about as follows:

Ether	1 death to about	7000	administrations.
Chloroform	1 " "	2000	"
Ethyl bromide	1 " "	4000	"
Pental	1 " "	2000	"
Chloroform and ether	1 " "	9000	"
A. C. E. mixture	1 " "	6000	"

The latest chloroform and ether statistics are, according to Ziegler:

Chloroform	1 death to about	1900	administrations.
Ether	1 "	"	26000	"

According to Chaput:

Chloroform	1 death to about	2000	administrations.
Ether	1 "	"	13000	"

In considering statistics allowance should be made for the fact that ether is the anesthetic usually selected for administration in desperate cases, leaving for the chloroform column a higher percentage of favorable cases.

Inhalers.—There is a multitude of chloroform and ether inhalers on the market, some of them modeled for the "open method," others for the "closed method" of administration. The Clover ether inhaler and the Junker chloroform inhaler are types of the former, and the Allis ether inhaler and the Esmarch chloroform mask of the latter. The advantages of the Clover inhaler are well presented by G. Gordon Campbell, of Montreal, in an article published in 1894 (*Annals of Surgery*, vol. xx, 676). In describing the inhaler he quotes from Joseph Mills's article on anesthesia in Treves's Manual of Surgery as follows: "The inhaler consists of a face-piece with an indicator, which by rotation may be made to point to 0, 1, 2, 3, or F, on the circumference of a metallic vessel containing fluid ether; and of a bag, into which and from which the patient breathes. It is so constructed that when the indicator is at 0, the expired and inspired air passes to and from the bag, without in any way communicating with the ether-chamber. If the indicator stands at F, the whole of the expired air must pass through the ether vessel to the bag, and at inspiration return from the bag through the ether vessel. When the indicator is at 2, half the inspired air passes to and from the bag direct; the other half passes through the ether vessel; and so on for the other numbers. The air does not pass through the ether, but simply through the vessel containing it, and this is sufficient to carry off a large amount of vapor." Perhaps the chief advantage claimed for this class of inhalers is that the amount of ether actually inhaled can be accurately measured during the anesthesia.

The Junker inhaler for chloroform is constructed on a similar principle, but in this the inspired air is charged with chloroform vapor by being forced by means of a hand bulb through the liquid chloroform, after which it reaches the face-piece through a rubber tube. The percentage of chloroform in the inspired air is regulated by the depth of chloroform through which the air passes and by the

number of compressions of the hand bulb in a given time, determined by the character of the respirations.

I discard the "closed" inhalers as being dangerous, cumbrous, expensive, and filthy as a class. Few, if any, of them can be asepticized without the expenditure of considerable time, and without thorough surgical cleansing after each anesthesia they are not fit to use. Take the Clover inhaler, for example. The patient's microbe-laden breath, to say nothing of its other constituents, is passed through the entire apparatus repeatedly, the face-piece is befouled with mouth secretions, stomach contents, etc., and this process is repeated time after time indefinitely. Possibly some of the pneumonias attributed to ether could be accounted for in this way. Insusceptibility to cleanliness can be urged against nearly all of the inhalers on the market. Even a rubber inhaler is not easily cleansed so as to eliminate certain disagreeable odors. The elaborately constructed appliances require an expert to use them, and with some of them, like the Junker inhaler, two persons are required in order to conduct the anesthesia properly. The paper and towel cone in common use is open to the objections that the supply of ether cannot be accurately regulated; the patient is apt to be asphyxiated into insensibility; the ether vapor is not sufficiently nor constantly diluted with air; the method is harmful and wasteful, in that the patient cannot be anesthetized and maintained in anesthesia with a minimum amount of the anesthetic. The inhaler which I have had used for my patients ever since I have employed ether extensively is the Esmarch chloroform mask, as suggested by Dr. Lawrence H. Prince, of Chicago, and now of Palmyra, Wis. (*Chicago Medical Recorder*, April, 1897). The only modifications necessary in this mask for ether administration are that there should be about twice the thickness of gauze covering it as for chloroform, and that in general it is desirable that it be a little larger than for chloroform, so as to increase the surface for evaporation. This inhaler is cleanly, since fresh gauze is applied for each case, it is efficient and safe, and the amount of anesthetic, whether ether or chloroform, and its admixture with air can be regulated to a nicety according to the needs.

Souchon, of New Orleans (*Journal of the American Medical Association*, Dec. 29, 1894), has devised an apparatus whereby ether or chloroform can be administered through a nasal tube passed down until it is opposite to the glottis. This device enables the surgeon to operate about the face and neck with the patient under continuous anesthesia, and with the anesthetist and his apparatus out of the way.

(*To be continued.*)

BOOK REVIEWS.

A Text-book of Diseases of the Nose and Throat. By D. Braden Kyle, M.D. Price, $4.00. Philadelphia: W. B. Saunders. 1899.

This work opens with a brief account of the anatomy and physiology of the nasal cavity. There is an excellent original transverse section of the skull showing the antra, turbinates, septa, etc. There is an excellent sagittal section, strikingly like that found in Gray's Anatomy. A chapter follows on the method of illuminating and examining the nose, and on the more essential instruments needed in rhinological work. Then follows a general description of inflammation of mucous membranes and a study of the relation of bacteria to disease of the nose.

One of the longest chapters dealing with rhinology is that including the acute and chronic inflammations; in the main this is satisfactory, but the author has adopted a rather cumbersome terminology and classification.

Ulcers are divided into non-infected, of which we have two subclasses, the simple and compound, and the suppurating and malignant. The infected ulcers comprehend almost all kinds common to constitutional diseases. In this, and in the succeeding chapter on the neuroses, we find the aim being to reach a scientific classification which in many cases will prove confusing to the student. This is hardly warranted by our present knowledge of these diseases. Neoplasms of the respiratory passages are exhaustively considered, and this we regard as one of the best chapters in the book. Liability of papilloma becoming malignant is mentioned, and the advisability of removing them through the natural passages is maintained. Operations upon the nasal septum and for deformities of the anterior nares are adequately described, together with diseases of the nasal cavity. We think it should have included deformities of the nose, which are frequently so disfiguring, and which are easily amenable to surgical intervention.

The faucial tonsil is spoken of as a large lymphatic gland, and the liability of systemic infection when ulcerated is emphasized. The author inclines to the view that tonsillotomy is preferable to tonsillectomy, claiming that the contraction of the tissues which follows materially reduces the size of the tonsil, removing the symptoms, and leaving the tonsil which is physiological. In caseous tonsils the whole of the gland should be removed.

Under diseases of the pharynx the author describes the treatment of diphtheria, and there is strong indorsement of the antitoxin theory. This remedy should be given with a free hand, irrespective of dosage. In well marked cases, at the lowest 2000 units should be used; the later the case is seen, the larger the dose employed. If at the end of six hours the patient is in the same condition, repeat the 2000; if worse, use a dose of 3000; if much better, wait until twelve hours has passed, and if in the same condition repeat the 2000, or if ever so little worse, 2000 or 3000 units at a dose. Then wait six or twelve hours and repeat again if the same condition is maintained—at six hours 3000, if worse 4000; if better, wait until twelve hours elapses and give 3000 or 4000 units, making the third dose in a favorable case, or the fifth dose in an increasingly ill case. Too little emphasis has been laid on these directions, which are quoted from Taylor. Undoubtedly many deaths occur from using too small doses, and if prompt results do not obtain, abandon the treatment.

A long chapter is devoted to the diseases of the larynx, the methods of examination, and to the surgery of these parts. There is an excellent index. The book is well printed and contains a large number of original illustrations and twenty-three colored plates. It is a complete and systematic treatise on the diseases of the throat and nose, and forms an excellent contribution to the literature. One would almost wish that it were a little less systematic—perhaps a little less scientific.

THE TREATMENT OF DISEASE BY PHYSICAL METHODS. By Thomas Stretch Dowse, M.D. Price, $2.75. New York: E. B. Treat & Company. 1899.

This is a new edition of the writer's work, Lectures on Massage and Electricity in the Treatment of Disease. The new book is an enlargement upon the former one, and while the bulk of the present volume relates to massage and electricity, it includes nearly the entire range of physical methods in the treatment of disease. The writer in his preface says that he is still of the opinion that massage is a most important physical aid in the treatment of disease states. This conviction has grown upon him as a result of its practice and its evident influence upon deranged physiological processes. Its usefulness as a health tonic cannot be denied.

The first lecture is devoted to the principles of massage, and the second to its method of application. Then follows a series of chapters upon the application of massage to different parts of the body. These include a lecture upon Weir Mitchell's treatment. The latter is written "Weir-Mitchell." The closing portion is taken up with a consideration of massage in the treatment of various disease states, such as hysteria, neurasthenia, sleeplessness, and sedentary changes in advanced life. This portion of the work closes with a description of the Nauheim treatment of diseases of the heart. The work closes with two short chapters, one devoted to electrophysics and the other to electrotherapeutics.

It is evident that the author includes under the term "Physical Methods" very little excepting massage and electricity. There is no good reason for including electricity under a different head from that of baths, but perhaps he would answer this criticism on the title of the book by the statement that balneotherapy is a distinct subject, deserving of special consideration. An examination of the book easily shows that all physical methods are not included in the description, though as a statement of the application and value of massage it leaves nothing to be desired. The part dealing with electricity is open to some criticism; it is too brief to be of much value.

A TEXT-BOOK OF ANATOMY. By American Authors. Edited by Frank Henry Gerrish, M.D., with the Collaboration of A. D. Bevin, William Keiller, J. T. McMurrich, G. D. Stewart, and George Woolsey.

To the older generation of medical students it will seem like rank heterodoxy to study anatomy from another book than Gray. In the several editions of the older work during the last twenty years there is shown an elimination of the errors and a broadening of the descriptions, but with a corresponding increase in the text. This augmentation was largely due to the description of minute points, and the mastery of anatomy by the student has largely consisted of committing to memory the text composed of separate and distinct statements, which conveyed the minute anatomical points which bore little relation to each other or to the general subject.

In the work before us there is a wide departure from this system, and an

effort has been made to exclude matters which are as yet of no importance. The needs of the student have been carefully considered, and it has been the endeavor to keep the text of the volume within a convenient size and to give such a presentation of the subject as can be comprehended in the ordinary time allotted to the study of this branch in the average medical college. The authors state in their preface that they have endeavored to make a text-book which shall stand in the place of a living teacher. An examination of the volume shows that they have succeeded in their undertaking so far as it is possible to supply the place of a personal instructor with a text-book. In this effort they have been aided by the publishers, who have supplied a profusion of illustrations that is remarkable even in this day of medical picture books. Color outlines are extensively used in showing the relation of muscles, vessels, and nerves. A large proportion of the plates have been taken from Testut's Traite de l'Anatomie. Where possible, the names of structures are printed directly upon the plate, thus facilitating reference.

The work closes with an appendix dealing with relational anatomy, which includes plain sections and the external muscular relations in different positions of the trunk and limbs. There are a number of excellent skiagraphs of the chest and important joints. The work, taken as a whole, forms a creditable American contribution to anatomical study. The flexible leather binding adopted by the publishers is a great improvement upon the usual cumbersome board covers.

MINOR SURGERY AND BANDAGING. By Henry R. Wharton, M.D. Fourth Edition, Revised and Enlarged. Price, $3.00. Philadelphia and New York: Lea Brothers & Company. 1899.

Within the past eight years four editions of this work have appeared, which is sufficient evidence of its value, and proves that it fills a need of the general practitioner and student. We fancy that the operating surgeon who has a considerable amount of work will not find much within its pages that is of use; but for the student, and above all those who are practicing minor surgery, it will prove invaluable. It is to be remembered that surgery of this character forms the bulk of surgical practice, the major operations being the exceptions. The first 108 pages are devoted to bandaging, which includes a description of the various kinds of bandages, the material of which they are composed, and the manner in which they are applied. There is an account of molded splints and their preparation. Part II includes minor surgery, surgery proper, and opens appropriately with a chapter on surgical bacteriology. This is followed with a description of sepsis and antisepsis in wound treatment, and a thoroughly careful description of the methods of preparing dressings when arranging for an operation. There are chapters upon ligatures, treatment of hemorrhage, opening and dressing of abscesses, and the treatment of wounds, bruises, bed-sores, and sprains.

Certain parts of the work are much better prepared than others. The chapter on dislocations is anything but satisfactory; it is far too brief, consisting in many places of mere definitions of terms, and there is no general consideration of dislocations. A number of old cuts are reproduced from Cooper and Bigelow, which, with our present knowledge of the management and reduction of dislocations, are practically valueless. The latter portion of the work is made up of a description of operations, is adequately illustrated, and leaves little to be desired. The descriptions are clear and easily followed.

EDITORIAL COMMENT.

THE BUSINESS ORGANIZATION OF THE PROFESSION.

The present age is one of organized effort. Individualism, so far as the productive work of society is concerned, is rapidly becoming a thing of the past. Within the memory of the generation now living, the larger proportion of the inhabitants of our country were agriculturists, who not only raised their own food, but to a large extent manufactured their own clothing and provided their own transportation. Practically all that they needed was the product of their own hands. Within a half century all of this has changed, and with it has come a development of the factory system. As time has passed this has grown larger and larger, and of late, to lessen the productive cost of goods, numerous concerns have joined together in the form of a trust. Whether a trust is in its essence good or evil we shall not discuss in these pages, but refer to it here simply to show the principle of organization which is directing the industrial world, and to ask the question whether a better business organization of the profession would not be in the interests of the physician and his patient.

At the present time thousands of dispensaries and hospitals throughout the land are advertising the charitable dispensation of medical services. These philanthropic (*sic*) enterprises would not be able to exist for a day without the active cooperation of the medical staffs composing them. Everywhere throughout the land hospitals are being organized for the exploiting of private charity and to furnish a place in which the medical man can exercise his vocation without cost to others and to the great detriment of the community, for medical charity is not different from the other forms, and is essentially debasing and destructive to the self-respect of the individual who receives it.

There is every reason why the profession should own and operate the hospitals, particularly those which receive paying patients. Of course, we do not now refer to the large public institutions supported by general taxation, in which only paupers are treated, but we refer to the paying hospitals, in part supported by the voluntary contributions of outsiders, and partly by the fees received from patients. It is these latter institutions which have done so much to reduce the financial resources of physicians. To these must be

added the free dispensaries and all the evils of misplaced medical charity that have grown up about them. If to a considerable extent these had remained where they belong, in the hands of the profession, many of these evils would have been avoided. A proper charge could have been made to those who were able to pay, and free attention and medicines would have been furnished to those whose circumstances did not admit of their contributing anything to the support of the institution.

There is another form of organization which, we think, will ultimately come from the extension of specialism—that is, the active association of a number of physicians in the practice of their calling. It is an old saying that "competition is the life of trade," and this seems to have been the predominating feature which has ruled the profession in relation to each other. Fortunately, this spirit of competition is becoming less and less keen, and there is more of a disposition to divide up the business according to a man's special capacities and proclivities, thus lessening the work and responsibilities of all without lessening the individual incomes. We look for an extension of this spirit of organization, and while we may hope it will never lead to the organization of a medical trust, yet from it we can reasonably hope that there will be a lightening of professional work with no lessening of income.

STRUCTURAL ANOMALIES IN THE LOWER PORTION OF THE LARGE INTESTINE AS A CAUSE OF CONSTIPATION.

Some years ago an operation, sometimes called the Pratt operation, was performed by a class of specialists who called themselves orificialists. The Pratt operation seems to have fallen into innocuous desuetude, and orificialists have largely deserted to the ranks of the osteopaths. The Pratt operation consisted essentially in cutting what was known as the "pockets" of the rectum, which seemed to be sort of normal duplications of the mucous membrane just above the sphincter. Inasmuch as every one had these rectal pockets, they were easily found. It was claimed by the orificialists, or, as we now term them, the "openers," that in the removal of these pockets they found the cure of all organic disease. Some unkindly critics said that the purpose of many of these operations was not only for the opening of the rectal pockets, but the operators did not neglect to open the trousers' pockets at the same time. Inasmuch as the Pratt operation involved a stretching of the sphincter, which sometimes failed to regain its resiliency, it is

said that this procedure added not a little to the white man's burden in the sections in which it was most in vogue.

There was never so harebrained a theory that it did not contain a small grain of truth at the bottom of an immense amount of chaff, and it has often remained for some absurd procedure, such as the Pratt operation, to call the attention of the profession to something of real importance. The same thing has been amplified over and over again in the history of the profession. Particularly is this true of hydriatic and mechanical treatment of disease as distinguished from mere drugging. With the latter the profession has always been content, and always to the front in devising and perfecting new methods. In the treatment of constipation, altogether too much attention has been paid to the giving of drugs, and too little to the mechanical causes of the disorder and the diseased states at the lower end of the large intestine. Of special importance in this regard is the address of Dr. A. B. Cook before the American Proctological Society, in which he said that constipation was often caused by disease of the rectum, and that the latter might stand in the relation of either cause or effect. Rectal reflexes come in for a fair share of consideration. It was the author's conviction that in a large proportion of cases constipation either originated in or was maintained by conditions situated in the lower ten inches of the intestinal tract.

Even a limited experience in the examination of patients will show the correctness of Cook's opinion. Those who are not inclined to accept this view, and who believe that local disease of the rectum is an infrequent cause of constipation, must simply be classed with those who infrequently examine the condition of the lower bowel in cases of this disorder.

CLOTHING AND FASHION.

One of the misfortunes of civilized man is that his raiment is prescribed by a changing and irresponsible fashion, that is dictated to a considerable extent by caprice, and perhaps still more by business considerations and financial necessities of tailors. Much criticism has been leveled at women's dress, tight lacing and high-heeled shoes having come in for not a little censure, and much has been written upon the twisted spines and "corset livers" which result from these follies. A further criticism of women's dress is that it is not sufficiently warm in winter, but the fact that this is offset by its being an admirably cool costume in the heat of summer is not gen-

erally stated. For the most part, the clothing of men is supposed to be quite sensible; it is, in the main, well adapted to cold weather, but during the hot season of the year it is altogether too heavy. In the fashioning of men's garments, the styles unfortunately come from a climate much cooler than our own. A weight of clothing which may be worn in comfort, and which, indeed, may be almost a necessity in the cool, moist atmosphere of England, is worn with the utmost discomfort in our own almost tropical summer temperature. Not only is the outer clothing too heavy, but the underwear is kept closely in contact with the body and evaporation prevented, and in addition starched collars and shirt-fronts are worn which likewise prevent evaporation and cause an immense amount of personal discomfort, not to say congestion of internal organs, and possible diseased states. All this arises from the fact that we do not seem to have independence enough to dress according to the needs of our own climate, which requires an abundant supply of warm clothing in the winter, and a summer dress of thin, light, porous material.

An example was noted on the golf links during the past summer. In many instances the golfing suits were composed of thick woolens, including a heavy vest, and in a number of cases a flannel shirt. These were reenforced by a heavy pair of worsted golf stockings, nearly a fourth of an inch in thickness. Of course, this was thoroughly Scotch, and if they had appeared on the links of St. Andrews they would have been strictly *au fait.* Unfortunately, as we have imported the game and costume in which it is played, we have not been able to import the temperature, which in the summer is very much below our average. In the few hot days which they have in Scotland golf is not generally played, and yet these days rarely exceed 80° or 85°. The bulk of the golf-playing on the other side of the water is done at a temperature ranging from forty to sixty, when leggings and heavy overgarments are a necessity. The same clothing worn upon our links, with the temperature running to ninety and above, becomes a simple absurdity.

Undoubtely much of the discomfort of our summers is due to unsuitable clothing. Any one who will try the matter will, we are sure, be convinced of this fact. A considerable degree of activity may be displayed if the clothing is suitable and admits of ready transpiration. There is a fallacy that underwear absorbs the perspiration. So it does, but in so doing it remains moist, and if covered by an outer garment acts as a poultice to the skin. The best dress for men during the extremely hot days of summer is a pair of light flannel trousers and a light linen or woolen shirt, with no underwear.

THE PREVENTION OF TUBERCULOSIS.

One of the most difficult and disheartening things is to attempt to impress the general public that an ounce of prevention is worth a pound of cure. This is true of all infectious diseases, and of none more so than of tuberculosis. The statistical evidence in favor of quarantine and isolation in cases of diphtheria, smallpox, and scarlet fever has instinctively led the profession to turn to the same means of defense in the struggle against tuberculosis. Ever since the infectious nature of the disorder was recognized, these views have been coming increasingly to the front, until now the personal hygiene of the tuberculous patients forms an important chapter in all works upon hygiene. Unquestionably, tuberculosis should be placed upon the list of communicable diseases, which means that especial care should be exercised in the treatment of these cases to prevent infection, and the rooms occupied by these patients should be cleansed and disinfected, the same as they are in other infectious disorders. We cannot say how far we ought to go in the interests of the public health, because some of the restrictive measures necessarily interfere with the personal liberty of the patient. Nevertheless, much will be done by active educational measures on the part of the profession. After all, tuberculosis is a disease which is favored by bad hygiene, poor food, filthy surroundings, dark and damp dwellings. These are the predisposing causes, and the effective propaganda against the disease means an improvement in the personal hygiene of those whose incomes are materially restricted.

The State owes one thing to its tubercular patients, and that is to provide the indigent with suitable hospital accommodations and treatment at an early stage of the disease. He should not be required to work as long as he is able and to live in unsanitary surroundings, which directly favor the progress of the malady, but adequate sanatoria should be provided in which patients may be treated in the early stages of the disease. Health departments of cities and large towns should add to their equipment the necessary laboratory methods for investigating tuberculosis, and the voluntary notification of this disease on the part of the profession should be encouraged. With the establishment of sanatoria in which these cases are treated a larger number will be brought under observation in the early stages of the disease, while the condition is yet curable. To a considerable extent rapidly advancing cases and those tending toward a fatal termination will remain in such institutions, and thus a dangerous method of infection will be removed from the community.

Such a plan as this involves no stringent measures, and no new laws. No one need be fined for neglecting to report cases, but adequately carried out such a scheme would result in an enormous diminution of tuberculosis.

THE SNAKE-CURE IN EXOPHTHALMIC GOITRE.

Dr. C. V. Comfort is credited with curing exophthalmic goitre by having a live snake coiled about the neck once or twice a week for two hours at a sitting. It is stated that this novel treatment had been learned from the Indians, the precious secret having been entrusted to one "Rattlesnake Pete," who is now a citizen of Rochester, and who has a choice collection of non-poisonous snakes with which he is prepared to treat cases of exophthalmic goitre. While the effect on the patient is said to be favorable, the results on the snake are quite severe; after such an application the snake requires at least a week to recuperate, and if the same reptile is used frequently an eruption upon the skin appears and it will die. The *Philadelphia Medical Journal* of September 16, from which we glean the foregoing, does not hazard an opinion as to the value of the treatment, but suggests that there may be some truth in the report, and that the effects of the treatment are due to the constriction and massage which the snake exercises.

Granting that this treatment occasionally helps, it is not necessary to assume that massage or constriction has anything to do with it. The course of exophthalmic goitre is subject to wide variations. Not long since the writer was consulted in a case of this kind, in which the patient had been under the care of a number of skilful physicians without benefit, and had received most of the approved methods of treatment. We were asked if Christian Science treatment would do harm, to which we replied that it would probably do no harm, but that it was almost certain to do no good, and the patient left with the apparent intention of going to a Christian Scientist. Some months afterward this patient was seen and seemed greatly improved in health and spirits. On questioning the patient we expected to hear a story of the wonderful efficacy of Christian Science in the treatment of this disorder, but were surprised to learn that the patient did not consult a "healer," for on the second day after the consultation she began to improve and continued to get better, so that she did not deem it necessary to consult any one. This was an example of the cases that improve without treatment.

It is a disease that is profoundly influenced by suggestion, and we certainly know of no better way of producing a profound mental impression than to have a live snake wrapped around the neck.

HOMEOPATHIC LOGIC.

It seems that our homeopathic friends, in their efforts to reach small doses, are rather overdoing the matter. Particularly is this shown in a recent issue of the *Homeopathic Envoy*, which we always quote with pleasure, and, we trust, with profit to our readers. For several months past we have devoted some attention to the "Hints," but in the last issue we have not found anything of importance, excepting in "great grief following the loss of loved ones" *ignatia* is indicated, and throat diseases beginning on the left side are to be treated by *lachesis*, while pain and soreness on the right side of the throat or beginning there is met by *lycopodium*. *Magnesia mur* seems to be an ambidextrous remedy, as it is recommended in congenital scrotal hernia, but without an indication as to which side it is on.

The *Envoy* is devoted to the propagation of the "true medical faith," and incidentally it takes up what it calls the follies and fads of scientific medicine, these being principally the germ theory of disease, serum-therapy, and vaccination, for all of which the *Envoy* shows supreme contempt.

In its tendency to minimize, being a disciple of small doses, it has reduced the logic of its opening paragraph of the September issue to about the thirtieth potency. Tuberculosis is the disease which receives the most extended discussion in the pages of the *Envoy*. We quote the following: "According to the *Chicago Tribune*, the State Board of Live Stock of Illinois declares that two-thirds of the cows that furnish milk for that city are tuberculose. If that is true (take it with a huge grain of salt), and if also it is true, as scientific medicine, so-called, tells us, that the use of milk from tuberculose cows causes tuberculosis in those who use it, then it surely follows that two-thirds of the citizens are tuberculose; as this conclusion is ridiculous, we are confronted by the further conclusion that there is a big screw loose somewhere in scientific medicine, so-called."

We do not know that the above requires extended comment, excepting to hope that the "huge grain of salt" which is recommended with the above will prove homeopathic to the deformed logic, even though it does nothing to the "tuberculose" cows.

THE PHARMACOPŒIA OF 1900.

The *Bulletin of Pharmacy* for September, 1899, has a series of letters from teachers of pharmacy, secretaries of pharmaceutical boards, and physicians, in relation to some of the important questions which will come before the forthcoming meeting of the committee on revision. Inquiry was especially made of the propriety of recognizing some of the more important of the patented synthetics and of applying further the principle of standardization as well as incorporating the doses.

H. A. Hare, professor of therapeutics in the Jefferson Medical College, says that at the present time the United States Pharmacopœia is practically never used by the physician. This is due to two chief reasons: first, it contains very little information that is of use to him; secondly, what little it does contain can be found in other works of reference. Few physicians care to know exactly how a pharmaceutical product is made, but rely upon the manufacturer for a good product. Personally, he feels that the Pharmacopœia is a standard which must be set up for physicians and pharmacists; it is the handbook of the pharmacist, but is only a reference book for the practitioner. He is heartily in favor of standardizing all galenical preparations where it can possibly be done. Approximate doses should be inserted, but with the statement that they are only approximations. He is opposed to the insertion of the patented synthetics, as it would be almost impossible to draw the line between the worthy and the unworthy. The influence that will be brought to bear by some manufacturers upon the committee will have an evil effect. Lastly, the Pharmacopœia is designed primarily to tell how to prepare drugs, and is not a list of names of synthetics; it is especially a recipe book, and not a directory.

THE EARLY DIAGNOSIS OF MEASLES.

Bolognini's sign is a peculiar friction sound felt by palpating the abdomen. It is elicited by grasping the abdomen between the two hands and making slight pressure toward the middle line, with a slight to and fro movement. With this movement a soft friction of crepitation is felt. This sign was regarded by Bolognini as diagnostic, but later writers have shown that it is present in most cases of intestinal catarrh. A study of measles shows that the disease is preceded by a diarrhea lasting for two or three days. It is found in the majority of cases, and is a symptom which has attracted little or no attention. Bolognini's sign is always obtained in such conditions of

the intestinal tube, and it is therefore not diagnostic of measles, except in so far as measles is preceded by the development of an intestinal catarrh.

Koplik describes a sign which occurs only in measles, and is present from twenty-four hours to from three to five days before the skin eruption appears—before the inflammation of the eyes and the development of fever. Of fifty-two consecutive cases, a diagnosis was made in thirty-two before the eruption appeared on the skin. In three of the thirty-two, a diagnosis was made three days before the eruption, and in nine forty-eight hours before. In the remaining cases less than forty-eight hours elapsed before the eruption appeared. In none of the fifty-two was the diagnosis wrong.

The sign consists of an eruption of small irregular spots of a bright-red color, in the center of which is a minute bluish-white speck. These are found upon the buccal and labial mucous membrane, never upon the hard or soft palate or the fauces. At first these spots are discrete, but later they become numerous and confluent. At the time of the eruption on the skin these spots begin to fade. It is usually necessary to make the examination in a strong, glaring light. Ordinary manipulations do not remove these spots, but brushing sometimes does.

There can be no question of the value of Koplik's sign in the diagnosis of measles. His observations have been numerous and carried out with sufficient persistence to warrant a diagnosis of measles where it is obtained. Taken in connection with Bolognini's sign, which is, of course, of much less value, the two form an exceedingly valuable contribution to the early symptomatology of this exanthem.

THE EFFECTS OF ALCOHOL.

The *Medical Record* is authority for the statement that the collective investigation of the British Medical Association relative to the effects of alcohol included the history of 4234 deaths. They were classified according to the alcohol habit as follows: Total abstainers lived on an average 51.22 years; the habitually temperate lived on an average 62.13 years; careless drinkers lived on an average 59.67 years; the free drinkers lived on an average 57.59 years; and the habitual drunkards lived on an average 52.03 years.

The inference to be drawn from the above figures is that so far as alcohol is concerned it is better to be a moderate or even a careless drinker than a total abstainer. Nothing, however, could be more fallacious than figures of this sort, and they are exactly com-

parable to certain statistics which were gathered not long since as to the relation of matrimony and longevity. It was found that the average death-rate was higher among the unmarried than among the married, age for age, from which the conclusion was drawn that matrimony directly tended to prolong life. Of course, in these figures they did not take into account the fact that to a large extent the invalids do not marry, at least not in anything like the same proportion that the strong and vigorous do. Consequently, in the mortality tables the married were, so to speak, selected risks. It is probable that the same factors enter into this compilation of the British Medical Association. It is notorious that while inebriety is in itself a disease, there are many other diseases, such as chronic dyspepsia and heart troubles, which actually prevent the use of alcohol because of its deleterious effects. Many of this class do not drink because they cannot, consequently they would swell the early deaths among the total abstainers. It is shown by these figures that the habitual drunkards actually live longer than the total abstainers, from which it may be concluded that habitual drunkenness tends to prolong life. A comparison of this kind, to be of any value, should be made upon individuals of equal physical vigor, and all of them free from organic disease. Much more valuable results are arrived at in animals, which have shown in no uncertain terms the destructive qualities of alcohol.

A NEW METHOD OF DETERMINING RENAL INCOMPETENCY.

The present method of diagnosticating renal disorders leaves much to be desired. At one time albuminuria and Bright's disease were regarded as synonymous. At present it has nothing like the same significance in the diagnosis of renal disorders; it has been conclusively determined that there are certain general states of the system in which albumin is secreted by the kidneys quite abundantly, and yet there is no serious kidney disease. Again, albumin may be absent from the urine in cases of well marked disease of the kidneys. The diagnostic significance of casts, which was early recognized, still maintains its position. Formerly, almost any kind of cast in the urine was thought to indicate a serious disorder of the kidneys, but this view has been modified somewhat, especially since by centrifugalizing urine our means of detecting casts have been greatly facilitated. There remains that attractive field, decrease of the urinary solids or in the amount of urea, as marking an inadequate kidney. These are open to numerous questions. For example, if

the diet is increased, the amount of urinary solids rises, and with it the amount of urea. If the diet is diminished, the total solids are decreased proportionately to a certain point, and if this is passed, then there is a consumption of the albuminous constituents of the tissues. The estimation of urea and total solids is only of value with a diet of known nitrogenous content.

Czyhlarz and Donath, in the *Wiener Klinische Wochenschrift* of June 15, 1899, have attempted to identify this diminished renal activity by the use of methylene blue. This substance was administered by the stomach, and the time at which it appeared in the urine was noted. Cases of delay in appearance and prolonged excretion were those in which there was disease of the kidney. The nature of the renal trouble is not indicated in any way by this method. It would seem as if this methylene blue test was worthy of further trial, especially in view of our present very inadequate means of determining the integrity of the renal structure.

MICROBES IN THE POLAR REGION.

The Arctic explorers are agreed that high latitudes are healthful. One reads in the annals of exploration of the days of exposure, great fatigue, and of the time spent covered with wet clothing, and yet one is struck with the almost entire freedom from colds, pneumonia, pleurisy, and other diseases which are thought to be due to extreme exposure. M. Levin, of Stockholm, thinks that this freedom is due to the fact that in the higher latitudes there is almost entire absence of microbes. He has set about solving the question by direct observation, which he has recently published in the *Annales de l'Institute Pasteur*. The observations were made in a voyage to the north in the polar expedition of Notthorst.

The air of the polar regions was examined; in some instances it was taken from the deck of the vessel, at another time upon land, and again from the surface of a glacier. Usually about two thousand liters of air was employed, and in only one instance out of some ten examinations, which included over twenty-one thousand liters, were germs found; these were believed by Levin to be due to a particle of dust from the ship. His study of the water showed that it always contained bacteria, but in extremely small numbers. On the surface of the sea one germ was found in each eleven cubic centimeters. The same was true of water obtained from glaciers. The examination of deep sea water showed that it contained a considerable number of bacteria, much greater than that at the surface.

In addition he examined the intestines of a number of animals, including a bear and various sea-birds, and found them absolutely sterile. In one white bear and in one seal a single species was found which closely resembled the bacteria coli commune. All of the intestines of birds that were examined were completely sterile, with the single exception of the sea-mew. All of this species which were examined were found to have bacteria in the intestines, as did also all of the animals taken from the deep sea.

THE X-RAY IN CHEST EXAMINATIONS.

Additional means of diagnosis are always looked upon as displacing other means. Thus, when the diazo-reaction was first announced, it was thought that it would make the observations of any other symptoms in typhoid fever unnecessary. The same was thought to be true of the Widal reaction. After a time the limitations of these methods became known, and it was realized that we must continue to observe the pulse, temperature, and abdominal conditions, and to look for rose spots, the same as the older physicians did. Even in such objective appearances as those furnished by the *x*-ray, in the examinations of fractures and dislocations, they were found to be corrected and verified by the older methods. In the examination of intrathoracic conditions the *x*-rays have been demonstrated to be of value, F. H. Williams of Boston and Albert Abrams of San Francisco having done a large amount of work in this direction. They claim that the *x*-ray examinations, by means of the fluorescent screen, will detect changes in the lungs long before they are appreciable by the ordinary physical signs. In tuberculosis these appearances are often shown long before the râles are heard or dulness on percussion is found. The same is true in the detection of aneurisms. In estimating the size of the heart and its exact position, nothing can exceed in accuracy the *x*-ray examination. Abrams points out that the *x*-ray examination should not displace other means of diagnosis, but it should supplement them. He employs this method in taking a general survey of the thoracic organs, and if anything is noted to be out of the ordinary, then the case is examined by the most approved physical methods. The *x*-ray examination does not enable one to make a diagnosis, but it points early to certain abnormalities.

ABSTRACTS.

MEDICINE.

Principles in the Treatment of Typhoid Fever.—

L. F. Rousch, in a paper before the American Medical Association (*Journal of the American Medical Association*, Sept. 2, 1899), says that he is satisfied that the majority of physicians do not believe in the possibility of aborting this disease, but he, in common with those who have used the Brand method, knows that by it the disease is modified, its duration lessened, and the percentage of mortality decreased. In hospitals, and in cities where there are bath-tubs and the trained nurse, this treatment should be advocated and practiced, but he does not think it practical in West Virginia, where he practices. He says: "Just think of it for a moment; not one bath-tub to over 1000 inhabitants; not one trained nurse in some of the counties of West Virginia, and no money to buy the one, or hire the other, and sometimes little to pay the doctor. What are we going to do about it? We will exercise common sense and do the best we can under the circumstances, and of this I am going to treat."

His experience in the treatment of 143 cases during the past four years leads him to think that he cannot be mistaken as to the value of certain remedial measures, particularly as they aim to do what the cold-bath treatment does, namely, to eliminate the toxins from the system, but by a different method, and through different channels.

First Therapeutic Principle. — Bowels should be acted upon by calomel, two or six grains once a day for the first six, eight, or ten days. This should be given whether the bowels are loose or not; particularly must it be given if the stools have a typhoid character. The salicylate of ammonium should be given in five-grain doses each two hours and continued each day while the fever remains over 102°. This drug is continued from first to last. In speaking of the results of this combined treatment, he says on the fourth and scarcely ever later than the fifth day the fever is permanently lessened, the patient comfortable, the pulse full and not too fast. There is no tympanites, the skin and tongue are moist, and the patient sleeps at night. The general condition of the patient is markedly improved, and it would scarcely be noticed that he had fever, unless the thermometer is employed. The temperature continues from the tenth until the

twenty-first day, when convalescence is established. The patient is allowed all the tea, coffee, or water that he wants. The surface is sponged three or four times a day, and if the fever runs high, he is sponged with cold water.

Second Therapeutic Principle.—Do not give food at first unless the patient desires it. As a rule he needs none until the greater part of the toxins have been eliminated from the blood. It is worse than useless to give food during the first week of the disease.

Third Therapeutic Principle.—No patient has been treated exactly right who has, or continues to have, tympanitic bowels; it is the worst symptom, aside from hemorrhage or perforation, that the patient can have, even if the tympanites is only moderate. Nearly every patient that dies has this symptom. This is brought about by continued typhoid stools with a consequent intoxication and lessening of the powers of the nervous system, especially those of the sympathetics. Gas is generated in the bowels, with distention due to want of muscular power. The treatment leading to the diminution of this condition is calomel administered frequently and in small doses, salol frequently repeated, and large doses of strychnine. Liniment of equal parts of camphor and turpentine is applied to the bowels. This treatment will overcome it, if the condition has not advanced so that the distention is great or peritonitis supervenes. Food is given on the sixth, eighth, or tenth day, in the form of milk; fruit juices may also be given. Do not use the bedpan; allow the patient to get up. This does not add materially to the dangers of perforation, and is of value in changing the position of the patient, rouses the vital energies, and they generally feel better.

A treatment based on these principles has given the writer a mortality of 3.5 per cent in 143 cases.

Death from Emigration of the Ascaris Lumbricoides.—

F. Katsurada (*Sei-i-kwai Medical Journal; Medical Review*, August, 1899) describes the case of a man 63 years old, of previous good health, who suffered from cough, expectoration, and fever. There were signs of consolidation at the right apex. He died fourteen days after admission to the hospital. At the autopsy a large cavity was found, occupying the greater part of the upper lobe of the right lung. In the liver was found a large cyst containing a large male roundworm; an abscess measuring six by five centimeters communicated with the cyst. The small intestine contained two roundworms.

A second case was that of a healthy girl aged 14 years. The

illness began with diarrhea, evening rise of temperature, and occasional abdominal pain. After a fortnight the abdomen swelled and the pain became severe. At the end of the month she was admitted to the hospital, where upon opening the abdomen a purulent fluid was obtained. The omentum was found to be adherent to the abdominal walls, and the intestines were so glued together that they could not be separated. The peritoneum was covered with purulent masses of fibrous bands, and 2500 cubic centimeters of purulent fluid was removed. Death occurred two days after operation. The necropsy showed a large roundworm enclosed in an irregular cavity, between the spleen and the diaphragm. The small intestine contained two roundworms.

A third case, that of a woman aged 42, gave a history of a painless tumor which had existed for ten years in the lower abdomen. The year before coming under observation this tumor had caused trouble and had grown in size. At the end of a fortnight the patient died from asphyxia and heart failure. After death the abdomen was found to contain 4400 cubic centimeters of dirty-yellow purulent fluid mixed with flocculent matter. The peritoneum was covered with dirty-greenish fibrinous exudation. A large roundworm was found beneath the under surface of the liver. The tumor was composed of two cysts and contained dark, grayish hairs. In the right upper angle of the solid portion the roundworm was found in its substance. Between the upper surface of the liver and the diaphragm was a roundworm partly enclosed in newly-formed connective tissue. Five roundworms were found in the intestines, but there was no perforation.

The first of these cases was an example of a roundworm passing up the bile-duct and producing hepatic abscess. Only twenty of these cases are recorded. In the other two cases the worms escaped into the peritoneal cavity, setting up a fatal fibrino-purulent peritonitis.

Weight of the Normal Heart.—

H. D. Arnold (*Reports of the Boston City Hospital*, 1899) has carried out a series of investigations at the Boston City Hospital of the heart cases which came to autopsy. He says that the weight of the heart is one of the most important points in determining the degree of hypertrophy. The measurement of the thickness of the heart is the next best means, but this varies according to the degree of contraction of the organ. As a means of estimating hypertrophy, it is also subject to variations, due to different thicknesses of the

heart wall in different positions. It is altered by its relation to the papillary muscles. On the contrary, the weight of the heart does not enable one to judge as to the part which is affected.

Arnold's conclusions are that the heart is altered in weight by comparatively slight influences; provided they are persistent, the effects are not unlike those of other organs, peculiarities and structures being considered. The heart is heavier in men than in women. The weight of the heart varies with the age, showing a steady increase up to maturity. After this time, in the case of women, the heart diminishes in weight, while in that of men it continues to increase. Of all cases over forty years of age, the condition of the arteries with relation to their elasticity needs special consideration. The heart is modified by general diseases. Weight in acute diseases is greater than in chronic. The duration of the disease and the amount of emaciation are important factors. The exact relation between the weight of the body and the weight of the heart cannot be stated. In large, well developed individuals, the weight of the heart is above the average, while in those who are poorly nourished it is below. There is no definite relation between the stature and the weight of the heart. Occupation affects the size of the organ in direct relation to the amount of labor involved. The continued use of alcohol in large amounts has some effect in increasing the weight of the heart, but it is not constant. The average weight in men is 290 grammes, and in women 260 grammes. The normal variation in men is from 250 to 325 grammes; in women from 225 to 300 grammes. The variation of twenty-five grammes outside of these may be normal; beyond that they are almost certainly abnormal.

Enteroptosis, or Glenard's Disease.—

W. F. Hamilton, in the *Montreal Medical Journal* for September, 1899, has an instructive article in which he says that notwithstanding the conflicting views concerning the classification of cases under this head, it may be accepted as safe teaching, at least for the present, that enteroptosis may exist without subjective symptoms. The enteroptosis of Glénard is associated with the most pronounced subjective signs, chiefly of a neurasthenic type. In those cases where a pendulous abdomen is present, the nervous features are less pronounced than in thin subjects with flattened abdomen. Typical enteroptosis may result from inflammatory processes in the abdomen. Any of the abdominal organs may be displaced in this disease. Most frequently, however, the colon and small intestines, the

stomach, the right kidney, and the liver are found in altered relations. The condition is due to an atony of the nervous system with a corresponding relaxation of the muscular structures of the body. Its predisposing causes are heredity, chronic disease, unhealthful methods of living, and the wearing of corsets. The disease is to be looked upon as a constitutional ailment.

The diagnosis of enteroptosis is comparatively easy. The epigastrium is hollow; the two lower quadrants of the abdomen, even with the patient in a reclining position, are often quite prominent. It is most important to determine the lesser curvature of the stomach and its relation to the greater curvature. Where the lesser curvature can be demonstrated, some degree of displacement exists; the amount of displacement is to be measured by the relation of the lesser curvature to the umbilicus. Palpation usually reveals movable kidney, and the liver when displaced is usually more prominent in the epigastrium and may be easily rotated on its long axis. In the diagnosis of this affection Glénard laid special stress on a test which was applied by the examiner standing behind the patient, also in the erect position, and laying both hands flatly over the lower zone of the abdomen. Then firm but gentle pressure is made upward. In the great majority of cases this affords considerable relief to the distressing pain which is felt in the epigastrium and which is one of the patient's chief complaints.

Tones and Murmurs Heard by Auscultating the Aural Cavity.—

H. C. Wagner, in the *Cleveland Journal of Medicine* for September, 1899, says that auscultation of the buccal cavity reveals certain sounds that are transmitted there directly from the large vessels in the neck or by the bronchotracheal column of air. One hears, under varying conditions, the heart sounds, and sometimes murmurs and frictions connected with the first sounds of the heart. These sounds are best elicited by having the patient close the lips firmly over the ball of the stethoscope. The breathing is suspended after a passive expiration; at the same time the nostrils are compressed. A table is given which includes observations made by this method upon one hundred cases. In fifty-four cases no tones were heard in the mouth; in ten cases a diastolic tone alone was heard. Ten of these presented an accentuation of the second aortic sound of the heart, and increased arterial tension. Four were normal cases, and three were without marked changes in the heart or aorta. Thirty-four cases had accentuated second aortic sound in which no tones were heard, including twenty-three cases of arterial sclerosis. In six

cases were heard systolic and diastolic tones, one without special signs, and five with increased arterial tension.

The normal tones, as they occur in the large vessel, heard in the mouth have no special significance. When intensified, they are often caused by changes in the mediastinum or displacement of the vessels or trachea. The presence of a solid tumor favors the conduction of sound. The diastolic murmur is found only in aortic insufficiency, and is transmitted from the aortic arch to the bronchus. Systolic murmurs are heard only where there are evidences of aneurism or dilatation of the aorta involving the arch. Their conduction is due to the close relation between the dilated aorta and the left bronchus. The systolic as well as the diastolic murmurs, when heard in the mouth, are of considerable importance as an aid in the diagnosis of these cases. The possibility of these originating in or being transmitted from the large vessels of the neck is excluded by the fact that they disappear when the glottis is closed. The venous hum from the jugulars, in chlorosis, is not heard in the mouth.

The Pathology of Acute Chorea.—

H. C. Thomas, in the *Clinical Journal* of September 13, 1899, reports the case of a girl aged 15, admitted to the Middlesex Hospital. The family and previous history were negative. There was no history of a previous attack of chorea, and there was nothing to which to attribute the acute symptoms which led to the patient's death. The chorea began April 6, and admission to the hospital was had on April 20. In spite of all treatment the movements increased in violence, and were only relieved for a time by inhalations of chloroform. As exhaustion supervened the movements became less violent, and death took place the third day after admission. The temperature, which had been 100° on admission, rose to 104° at the time of death.

Post-mortem examination showed considerable hyperemia of the brain and cord, and a few minute hemorrhages into the white matter of the brain. Beyond these there were no macroscopic changes. The heart was slightly enlarged, the aortic and mitral valves reddened and swollen, presenting minute swellings; the endocardium presented a general appearance of recent acute inflammation. Cultures were attempted from the heart, but no microorganisms were found. Fresh nerve cells from the cerebral cortex were stained with methylene blue and mounted without hardening. Other sections were prepared in formalin. Sections were stained with silver, the same methods being employed upon the spinal cord;

also a logwood and a logwood-eosin stain. With the silver, some irregular varicosities were seen on some of the dendrons, but these, the author thought, were artificial. There were no signs of thrombosis or embolism. The general result of the post-mortem examination was negative so far as locating any definite changes in the nerve centers which would account for the conditions observed before death.

A Universal Stain for Blood-corpuscles.—

L. Michaelis (*Deutsche Medicinische Wochenschrift*, July 27, 1899) has devoted attention to the study of staining the elements of the blood, endeavoring to devise a more complete and satisfactory stain than Ehrlich's. The problem in this kind of staining is to bring out the neutrophiles, eosinophiles, and basophiles. He thinks he has satisfactorily accomplished this. The dry smears are fixed by heating upon a copper plate or treated by absolute alcohol for twenty-four hours.

In preparing the stain there is first made: (1) a one-per-cent watery solution of methylene blue; (2) a one-per-cent watery solution of chemically pure eosin. These should be prepared in distilled water, which should be perfectly fresh and free from the slightest trace of alkalinity. From the foregoing stock solutions there should be made mixtures: (*a*) twenty cubic centimeters of absolute alcohol, and twenty cubic centimeters of stock solution No. 1; (*b*) twenty-eight cubic centimeters of acetone, and twelve cubic centimeters of stock solution No. 2. In using the stain, equal parts of mixtures *a* and *b* are poured into a glass vessel, and the previously fixed and dried blood-smears are sunk to the bottom of the glass with the smeared side down. Staining takes but a few minutes. The first color is a pure blue, and this gradually becomes replaced by red, and at this moment the action of the stain should cease. If continued too long certain elements of the blood will be decolorized.

A Case of Congenital Cyst of the Cerebellum.—

Hunter Robb, in the *Cleveland Journal of Medicine* for September, 1899, describes an exceedingly interesting case, where the death of a patient was apparently closely related to a hysterectomy. The patient was 30 years of age, with a complete uterine prolapse. Shortly after an operation for the replacement of the prolapsed organ, a fetus of three months was discharged. This was followed by an alternating rise and fall of temperature. An irrigation of the

uterine cavity was made, after which the temperature remained normal. On the tenth day after the cleansing of the uterus a vaginal hysterectomy was undertaken, on account of the large size of the prolapsed uterus. After the operation the temperature remained normal, and she was considered to have fully recovered from its effects, when, while sitting up in bed and eating her supper, she suddenly became unconscious and died shortly afterward.

The post-mortem examination was largely negative as to the thoracic and abdominal organs. The cerebral fossæ were small, the right having a greater capacity than the left. The foramen magnum was not enlarged, but the depression of the occipital bone just anterior to it was distinctly larger than normal. The brain as a whole was small, but the cerebral hemispheres were normal as to fissures and convolutions. The cerebellum was atrophic; the left hemisphere measured 4.25 by 3.50 by 1.50 centimeters; the right measured 1.50 by 1.75 by 3.50 centimeters. The average normal measurements of the hemispheres are 6.50 by 4.50 by 5.25 centimeters. The cyst was at the base, between the pia and brain substance, in direct connection with the fourth ventricle; it measured 6.50 by 4.50 centimeters. It was adherent above to the extreme posterior border of the cerebellar lobes, below to the junction of the occipital lobes, about the level of the posterior commissure.

The Clinical Significance of Floating Liver.—

Max Einhorn says that a diagnosis of this condition is reached by demonstrating that the organ has left its normal position from behind the ribs and has been displaced more or less forward and downward. Percussion is of some value in determining displacements of this organ, but palpation is much more important, and may enable us to make a diagnosis. This is made by using the palmar surface of the fingers or the entire hand. Strong pressure must be employed. It should begin at the right border of the ribs, where we are always able to find a portion of the liver surface. From this point it should pass downward and forward, as far as the umbilicus. Sometimes the lower border can be recognized as low as the umbilicus, and in these cases it is often possible to palpate the convex superior surface by inserting the fingers deeply between the liver and the right costal arch. Palpation as well as percussion should be carried out both in the recumbent and upright position; in cases of highly developed mobility of the liver the organ may slip back into its normal position as the patient lies down.

The author says that this condition is by no means rare; in two

years, in his own private practice, he met with four cases, in most of which there had been errors of diagnosis. In three cases of floating liver in women a diagnosis of gastric cancer had been made, due to a tumor which was felt below the right border of the ribs, extending downward into the left. In the case of a woman a diagnosis of appendicitis had been made by one physician, and a gall-stone by another. Both recommended operative treatment. This patient recovered immediately by the application of an abdominal bandage, which held the liver firmly in its normal position.

A Case of Bacteriuria.—

F. Warburg (*Munchener Medicinische Wochenschrift*, No. 29, 1899) says that one understands by this term the passage of urine containing a large number of bacteria without the existence of inflammation of the kidneys or urinary passages. The case reported by the author was that of a man 54 years of age, who had not suffered from gonorrhea or other venereal disease, and who had entered the hospital for a simple bronchitis. The third day after his entrance he had a severe attack of headache, chills, and a high temperature. Accompanying these symptoms the urine became cloudy. On the fourth day the fever and headache subsided, but the general depression and the cloudy condition of the urine persisted. Examination of the urine showed it to be free from albumin. There were no casts or leucocytes, but it contained a large number of the bacillus lactis aerogenus. The author, in commenting on the presence of this bacillus in the urine, asks how it could have reached the kidneys. He suggests that possibly the bronchitis may have furnished the original source of the bacillus, particularly as this microorganism is said to be identical with the pneumococcus of Friedlander.

Accidental Albuminuria.—

C. G. Stockton, in the *Journal of the American Medical Association* of September 23, 1899, says that by this term is understood the presence of albumin in the urine exclusive of disease of the kidneys. It is applied to those cases in which albumin finds its way into the urine through the genito-urinary tract below the renal parenchyma. Albumin thus arising has an interest for the internist, as it must be excluded in making a diagnosis of kidney lesion. It is also of positive value in diagnosis in recognizing the pelvic renal diseases, diseases of the ureters and of the bladder.

In diseases of the pelvis of the kidney, which may be inflamma-

tory or tubercular, albumin in the urine is rarely absent. In all these cases the reaction of the urine is sharply acid, and the albumin is associated with pus, blood, or mucus. Tube-casts are absent. The writer is of the opinion that inflammation of the ureters is a not uncommon condition, and that it is sometimes taken for appendicitis or ovarian or tubal trouble. He has twice seen this condition after parturition in women with floating kidney. There is no difficulty in recognizing the albuminuria of cystitis. Here the urine is alkaline, there is an abundance of pus and mucus, with escape of the bladder epithelium. The relation of small quantities of albumin to gonorrheal infection of the urethra is well known. In closing the writer calls attention to the importance of accidental albuminuria and to the necessity of making frequent examinations, lest there be a rapid extension of the trouble to the secreting structure of the kidney.

Leucocyte Count in Appendicitis.—

Geo. D. Head, in the *Medical Dial* for September, 1899, says the leucocyte count is of aid in the diagnosis of appendicitis; that it determines the character of the suppurative varieties; and that it enables the clinician to say whether the process is involving new areas or is going on to resolution. It almost certainly distinguishes between typhoid fever and appendicitis. In typhoid the leucocytes are normal or diminished. The cases of appendicitis with a white count of over four thousand are suppurative in character. The count will enable us to determine the presence of pus in 80 per cent of the cases. The data at hand is limited, but so far as it goes it would seem to indicate that gangrenous appendicitis cannot be distinguished by the leucocyte count from a catarrhal condition. The leucocyte count may be very high, and yet the patient recover without operation.

Subcutaneous Abscesses Caused by Bacillus Prodigiosus.—

J. H. Pratt (*Reports of the Boston City Hospital*, 1899) says that this complication was recognized by the older writers. Basle reports that abscesses were found eighty-five times among 1750 cases, and Holscher found in 2000 fatal cases nine instances of suppuration of the subcutaneous tissues and seven of muscle abscess. Melchior divides the suppurations of the subcutaneous tissues into three groups: (1) Secondary infections with ordinary pyogenic bacteria; (2) mixed infections; (3) suppurations due to bacillus typhosus alone. The last is exceptional. Vincent observed it but once in

twenty-one cases, and Keen tabulates only three cases. The writer has collected ten cases in the literature in which the typhoid bacillus was the cause of suppuration in the muscles and subcutaneous tissues, to which he adds two cases.

"Typhomalarial" Fever.—

C. R. Grandy, in the *New York Medical Journal* of September 30, 1899, says that this term is used in America to describe not less than three distinct diseases. The vast majority of them seem to be atypical typhoid fever entirely without malarial complications. The second type of this group is thought to be a continued malarial fever, while the third and smallest division is typhoid fever occurring in a malarial subject. In this latter class the typhoid fever dominates the clinical picture, the malarial symptoms appearing only at the beginning and at the end. When typhoid and malaria occur in the same person they are two distinct diseases, each independent of the other, and they should not be classed as one disease.

SURGERY.

The Dangers of Reducing Dislocations of the Shoulder by the Foot-in-Axilla Method.—

W. T. Thomas, in the *Liverpool Medico-Chirurgical Journal* for July, 1899, states that the frequency with which local palsies occur after dislocations of the shoulder is due largely to the older methods of reduction. He has seen a number of cases in which the grasp of the hand was quite normal before the reduction, and consequently he regards the means as a cause of the paralytic trouble. His method of reduction is as follows (taken from the *Medical Review*, September, 1899):

The patient is seated on a firm stool or chair; an assistant stoops down on the left side, *if the right shoulder is dislocated*, and with his left arm crossing the front of the patient's chest, places the hand firmly on the end of the right clavicle and acromion; his right arm is passed behind the patient's back and grasps with hooked fingers the axillary border of the scapula. This is to fix the scapula and prevent the manipulator dragging the patient off the chair (occasionally a second assistant becomes necessary to hold assistant No. 1, if the muscles of the patient are powerful and traction by the surgeon has to be kept up long). The surgeon, keeping the elbow at a right angle, grasps the wrist of the dislocated arm with his right

hand and the lower end of the humerus from behind with his left hand, and locks this hand against the forearm of the patient to prevent slipping. He now *quietly* and *slowly* abducts the humerus to the right angle. Traction outward is commenced as soon as the humerus is half-way up, and is steadily and quietly but firmly continued, at the same time gently rotating the humerus outward; in other words, drawing the arm out of the side and taking the hand and forearm up in the air, keeping the elbow at a right angle all the time. If the head of the humerus does not travel from beneath the coracoid process, in subcoracoid dislocation, the surgeon places his own feet nearer the patient, and while steadily pulling falls away from the patient, thus bringing his own weight to assist traction, and in some obstinate cases slowly rocking the humerus up and down, or from side to side, to tire the powerful muscles which are resisting, chiefly, of course, the deltoid and pectoralis major. In ordinary cases the head of the bone easily slips into the glenoid cavity, and, on account of the steady, continuous traction, without snap or jerk. If the head is not reduced by this time, rotation outward is continued until locking occurs. Rotation inwards now immediately puts the humerus right; traction is at once stopped, and the surgeon slings the reduced arm to the patient's side, keeping the hand high.

If this method is used slowly and thoroughly, so little pain is caused that chloroform is rarely required to relax the resisting muscles. The writer generally keeps up a running conversation with the patient during the manipulation; this serves to distract his attention and causes involuntary relaxation of the muscles. Chloroform is occasionally required, not on account of the size of the muscles, but in highly strung, nervous men or women, who will not bear even slight discomfort, still less actual pain. If an anesthetic has been administered, the scapula is fixed in the same manner, the patient, of course, now lying down; the same traction and manipulation is gone through, but very little of each is then required. (Altering "left" to "right" and "front" to "back" in the above description will, of course, apply to dislocation of the left shoulder.)

Résumé. — Fix scapula; abduct arm, elbow being at a right angle, and apply traction; rotate humerus outward, add weight to traction if reduction obstinate, and rock humerus to still further tire the muscles if the patient is powerful, and rotate outward until locking occurs; rotate inwards; sling hand to opposite shoulder.

The only criticism to be passed upon this method is a failure to recognize principles in the reduction of dislocation, which were

pointed out by the late Professor Gunn, namely, that the limb should be placed in the same position in which it was at the moment the dislocation occurred, and gentle traction should be made in the reverse direction. There is undue importance given to muscular contraction as one of the elements in preventing reduction. This error was early pointed out by Professor Gunn. He conclusively showed that it was the untorn portion of the capsular ligament which hindered the joint from being replaced.

Nasal Bacteria and Their Relation to Disease.—

D. B. Kyle, in his late text-book on Diseases of the Nose and Throat, has an excellent chapter on nasal bacteria and their relation to disease.

Within the past few years there has been much study of the rôle of bacteria within the nasal chambers and the relation of such bacteria to disease. Opinions differ as to the presence of pathogenic bacteria in the normal nasal mucous membrane. While the membrane may be normal as to its function, the construction of the nasal cavity may be such as to permit of the accumulation of normal secretions. This accumulated normal secretion forms a suitable nidus for the lodgment of dust and other irritating materials, which soon cause local alteration, besides perverting secretion and furnishing nutrient media for the development of bacteria, which are constantly inhaled and find lodgment in the localized irritated areas. Inoculations from normal nasal cavities in the majority of cases show bacteria. Unless the normal secretion has been retained and has undergone some chemical change, it does not form a suitable nidus or medium for the development of bacteria. Pathogenic bacteria may be present, and if the mucous membrane is not subjected to some irritation giving rise to lessened physiological resistance, these bacteria do not proliferate and are harmless.

The author's investigations, which include over 200 inoculations, have not furnished definite conclusions. The surroundings of the individuals have much to do with the presence or absence of bacteria, as well as with the variety found within the nasal chamber. For example, inoculations from nasal cavities which presented normal appearances, made under different surroundings, gave entirely different results. Repeated inoculations were made from the same individual from the nasal mucous membrane, on rising in the morning, after staying in the office or room for several hours, after having been exposed to the street dust, and after having attended places of amusement. The results were as varied as though the experiments

had been carried on in different individuals. Again, inoculations made from persons having various forms of catarrhal inflammation of the nasal mucous membrane gave the same varied result; in many instances he believes that the bacteria bore an important relation to the inflammatory conditions, but their etiological relation was secondary. Before the bacteria found access to the mucous membrane there was some alteration in the epithelial surface, brought about either by external or internal irritants, which lowered the physiological resistance of the individual epithelial cells.

Besides pathogenic bacteria, there are associated varieties of the blastomycetes, which, while not possessing any pathogenic properties, are capable of producing irritation and admit of absorption of saprophytic products. If the nostril is thoroughly cleansed under the strictest antiseptic precautions, and a pledget of sterilized cotton placed within the nose, which in turn is protected in the majority of cases, the secreted mucus is free from bacteria. The nasal mucus in certain individuals possesses antiseptic properties, depending upon the chemical reaction of the secretions—which differs in individuals—and it is largely controlled by the general health of the individual and by constitutional diathesis. In persons with irritated mucous membrane and with excoriations about the nasal orifice, in whom from urinary examination and from testing the nasal secretions were found to be decidedly acid, the bacteria present were nonvirulent, and where growths were obtained on blood-serum they were feeble and slow of development. This is explained by the fact that with few exceptions pathogenic bacteria require alkaline media. In diseases of the nasal cavities in which there is accumulation of secretion, as is the case in the various forms of atrophic rhinitis, the examinations give such a variety of bacteria that no special one can be assigned as a cause. There are always present the bacteria of decomposition, and it must be remembered that the products of these germs are constantly being absorbed from the mucous surfaces, and may account for some of the ill effects on the general health of the individual. While the bacteria present may have largely lost their virulent properties, yet with suitable chemical constituents and reaction of the secretion proliferation of the germ is favored and its normal virulence regained. Accumulated secretion in the nasopharnyx and pharnyx during sleep may be swallowed by the patient, thus causing gastric disturbance, as is shown by the frequent association of gastric lesions with those of the upper respiratory tract. This does not explain many of the associated conditions, but often, when such apparent relation exists, the local lesions were

induced by and dependent upon some constitutional condition which brought about the lowered resistance on the part of the local epithelial structures.

The bacteria present on the nasal mucous membranes and in the secretion include many of the pathogenic cocci and bacilli, besides many unclassified and non-pathogenic germs. The bacteria most commonly found are the staphylococci or micrococci, the micrococcus pneumoniæ (Fränkel), bacillus tuberculosis, Friedlander's pneumococcus, Klebs-Loeffler bacillus, Von Hoffmann's bacillus (bacillus of pseudodiphtheria), bacillus fœtidus, Loewenberg's ozena diplococcus, and various forms of sarcina. Quite frequently the streptococcus is present, although in the majority of instances it was associated with an acute inflammatory process. With this exception, frequently the isolated bacteria were not associated with any special inflammatory condition. The bacillus of diphtheria was found on the apparently healthy mucous membrane after the individual had been exposed by passing through the diphtheria wards in the hospital, although there was no associated inflammatory process. Frequently the bacillus of tuberculosis was present after the individual had been exposed to the dust of the street, the inoculations being made from the nasal mucous membrane after one-half hour's exposure.

While he does not belittle the importance of bacteriological investigation, nor the important relations of bacteria to disease, in a great many lesions of the mucous membrane of the upper respiratory tract the part played by bacteria is purely secondary. If the anatomical structure of the nasal cavities is such as to permit of accumulation of secretions and dust, or the physiological resistance of the membrane is lowered by constitutional diathesis or organic lesions, the altered and accumulated secretion forms a suitable nidus for bacterial proliferation.

A Grooved Perineal Cannula as a Guide in Perineal Sections.—

Ramon Guiteras (*Medical Record*, July 1, 1899) has modified the instrument which he presented before the Section of Genito-Urinary Surgery of the New York Academy of Medicine some two years ago. It now consists of a cannula (Fig. 1) four and a quarter inches long, a handle two and a half inches long, with a trocar of four and three-quarters inches. This is sufficiently long to penetrate the perineum, even if much thickened by deposits of fat or inflammatory exudate. The instrument has been devised for the purpose of overcoming some of the difficulties in entering the posterior urethra by the

perineal route. It avoids excessive hemorrhage and infiltration, and does away with the extensive dissection of the perineum, sometimes unnecessary in these cases. It also shortens the time of operation, an important point in cases in which there is disease of the

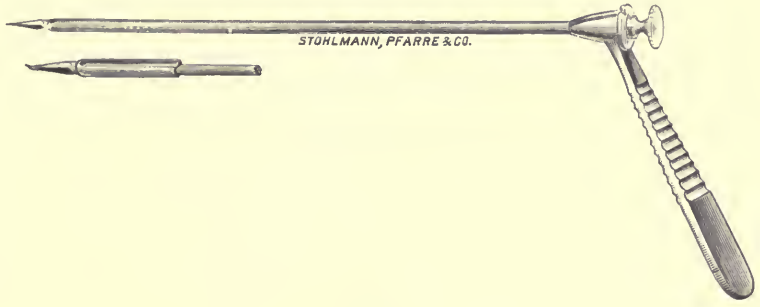

FIG. 1.

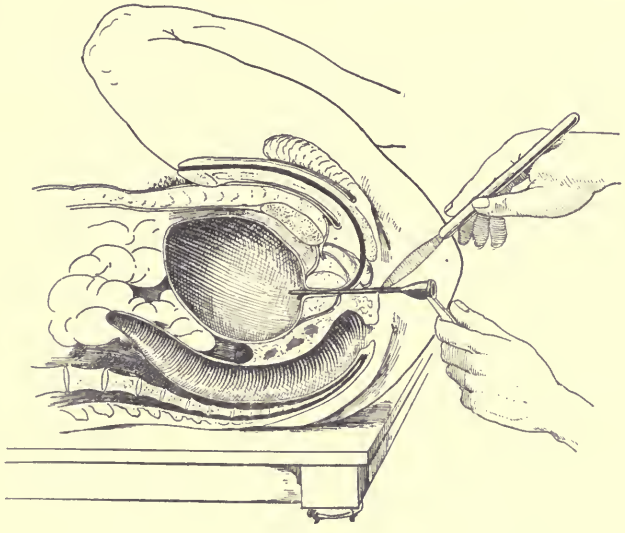

FIG. 2.

kidneys. In Fig. 2 the position of the patient is shown in the exaggerated lithotomy position, with the instrument *in situ*. When this operation is indicated, a guide cannot be passed into the bladder. A filiform should be inserted as far as it will go, which is generally into the perineal urethra, and then a tunneled sound is passed down over it. After this, an incision is to be made in the median line from just behind the scrotum to within three-fourths of an inch of the anus. If the end of the urethral guide is in the perineal portion of the urethra, the surgeon should cut down upon it and catch

the outer walls of the urethra by artery forceps or by ligature. Then the stricture is incised. If this is not accomplished the instrument here described is to be used, as follows: After inserting the forefinger of the left hand into the rectum until its tip rests upon the apex of the prostate, the surgeon should introduce the perineal cannula, held in the right hand with the thumb pressing down upon the proximal end of the stylet, through the incision in the median line, until it is felt to have passed the tip of the forefinger in the rectum. It is then probably in the prostatic urethra. The stylet is withdrawn, and if urine escapes it is apparent that the instrument has penetrated the neck of the bladder. The handle of the instrument is then grasped firmly by the left hand and a bistoury pushed along the groove on the top, into the bladder. The after-treatment is the same as in perineal sections of the bladder.

Tonsillectomy vs. Tonsillotomy.—

J. H. Coulter (*Journal of the American Medical Association*, Sept. 23, 1899) says that a more perfect incubator of disease germs could not be devised than a tonsillar crypt. Many extensively diseased tonsils do not show appreciable enlargement when the throat is examined. Even when larger than normal, they may be quite embedded beneath the pillars of the fauces. This can be easily demonstrated by having the patient gag, when the gland will be seen bulging prominently from under the pharyngeal aponeurosis; this position of the gland is frequently found, and in these cases nothing short of removal of the entire gland will give a successful result. Hence, tonsillectomy, by which is understood the careful dissecting away of the whole gland, is to be preferred to tonsillotomy, which as commonly performed by the tonsillotome amputates only a portion of the diseased gland.

The contrasting of these two operations shows a distinct advantage in favor of tonsillectomy, as it absolutely prevents recurrence of tonsillitis because of the removal of all of the diseased crypts with their contained bacteria. It liberates the pillars and restores the action of the soft palate, with a corresponding improvement of voice. If the operation is perfectly done, a smooth surface is left, a result not reached by tonsillotomy. It is the only practical method in those tonsils where the surface is so soft that a firm hold cannot be obtained by a tonsillotome. Hemorrhage or complication is not more frequent than after tonsillectomy. In more than three hundred cases the reporter has not met with any untoward results, only one requiring attention on account of hemorrhage.

Removal of a Foreign Body from the Bronchial Tube Through the Trachea.—

A. Coolidge, Jr., in the *New York Medical Journal* of September 23, 1899, reports the case of a man 23 years of age, who for twenty years has worn a tracheotomy tube for stenosis of the larynx. Twelve hours before admission the tracheal tube had become detached from the shield and had been inhaled, causing severe coughing and dyspnea. Examination by the *x*-ray was negative. The patient was etherized and put on his back, with the shoulders over the end of the table, and the head held downward and rotated to the right side. The tracheal opening was enlarged. Not having a properly constructed straight tube, a urethroscope having a diameter of one-half inch and a length of three inches was introduced with the stylet in place; the latter being withdrawn, a mirror was easily pushed into the trachea to within an inch of the bifurcation. For illumination a head mirror was employed, which secured a perfect field. The foreign body was seen in the right bronchus, the upper end about one-half inch below the bifurcation; it was seized with a long pair of ligature forceps and removed without difficulty. With the tube in place, respiration was carried on with ease.

The writer says that in cases of a foreign body, of a size large enough to make it improbable that it has reached beyond the primary bronchus, immediate tracheotomy with exploration by a straight tube is the best procedure. A foreign body loose in the trachea is much less dangerous than the same body impacted in a bronchial tube. The danger of a foreign body in the trachea being carried into the bronchus should be met by having the patient breathe as quietly as possible, and its removal by a tracheotomy under cocaine.

"Fungous Foot."—

J. T. Arwine and D. S. Lamb, in the *American Journal of the Medical Sciences* for October, 1899, report what is described as the fifth case of this disease in America. The patient was 45 years of age, born of Mexican parents, and lived in southwestern Texas. The disease began about 1887, with severe pain in the left foot, lasting thirty-six hours. After this a red spot appeared on the foot. There were chills and fever. The pain continued throughout the course of the disease. The local physicians diagnosticated elephantiasis and advised amputation. Twelve years after the onset of the trouble the leg was heavy, but there was no pain. An amputation was made, and the arteries were found to be considerably

enlarged. The amputated portion was examined at the Army Medical Museum, and was found to be a typical case of mycetoma, or madura foot. The foot and ankle were much enlarged and showed the characteristic "buttons" of fungous foot. They varied in size and were closely set, and numerous on the dorsum of the foot. The subcutaneous tissues showed numerous interstices filled with an oily white pasty matter mixed with brownish bodies, measuring from 0.5 to 2 millimeters in diameter.

The author says that it is possible that many of the cases which are diagnosticated elephantiasis are really examples of this disease. The two American cases in possession of the Army Medical Museum came from Texas. In India the disease is found almost exclusively among the peasantry, who go barefoot on the soft, bare ground. Tropical and semitropical America ought, theoretically, to furnish many more cases than are reported.

The Early Diagnosis of Uterine Cancer.—

T. A. Ashby, in the *Maryland Medical Journal* of September 23, 1899, sums up an article on this subject as follows: Cancer of the uterus is a very insidious disease and may reach an advanced stage before its symptoms are alarming. Early it imitates simple functional disturbances. Hemorrhage and a foul discharge are always suspicious. Hemorrhage and discharge near the climacteric should be investigated. All forms of uterine disease not responding to judicious local treatment should arouse suspicion and lead to a microscopical examination of uterine scrapings. Lesions about the cervix should be corrected; if not removed by operation, they should be examined at short intervals. When in doubt as to the cause of any uterine disease, investigate for cancer.

Massage and Suture in Fracture of the Patella.—

Lucas-Championniere (*Journal de Méd. et de Chir.*, June 25, 1899) condemns any fixation apparatus in the treatment of fracture of the patella, employing solely for this purpose massage or suture, the latter being preferred. If massage is employed, it should be begun soon after the accident; it should be gentle, and its effects should always be to relieve pain. Whether suture or massage is employed, passive movement should begin as early as the tenth and not later than the fifteenth day after the accident. In suturing the bones, strong silver wire is employed. Where sutures are used massage is not employed, but early passive movements should be made.

THERAPEUTICS.

Physiological Action of Guaiamar.—

G. F. Butler, in the *New York Medical Journal* of September 23, 1899, gives an exhaustive report of his experience with this substance in typhoid fever and other conditions. He finds in it many advantages over preceding derivatives of creosote, in that it is soluble in water and is readily absorbed into the system, not only through the alimentary canal but by inunction. Guaiamar is a dry, white, crystalline powder, melting at 75° C., and has a bitter, aromatic taste. It is compatible with other substances, and instead of interfering with digestion it has a marked tonic effect.

During the past year Butler has treated twenty cases of typhoid fever with guaiamar, excluding all other remedies, except the cold bath for reduction of temperature; each case ran an exceedingly mild course, and compared with others where the cold bath was used alone, those in which guaiamar was used showed a uniformly lower temperature and the general symptoms were less severe. None of these cases developed complications such as hemorrhage or tympanites, and stools were deodorized after two or three days' administration.

In acute articular rheumatism the author has found that an ointment composed of two drachms of guaiamar and one of lanolin applied to the affected joints, followed by swathing in cotton and bandaging, greatly lessened the suffering. In gonorrheal arthritis he has used the following ointment with marked success:

℞ Guaiamar..... 2 drachms.
Unguenti belladonnæ..... 4 drachms.
Unguenti hydrargyri..... 4 drachms.

This is freely rubbed into the joint, which is then covered with cotton and bandaged.

Guaiamar is of value in the treatment of chronic bronchitis, bronchiectasis, and bronchorrhea, and is useful as an expectorant in bronchopneumonia. In the initial stages of pulmonary tuberculosis it is a satisfactory remedy, and even in the later stages it exerts an inhibitory influence over the night sweats, and soothes the cough and expectoration.

In a case of erysipelas of the face he gave guaiamar internally, five grains three times a day, and applied the following prescription locally:

℞ Guaiamar..... 4 drachms.
Glycerin..... 1 ounce.
Water.....q. s. ad 4 ounces.

The patient improved rapidly.

The following ointment was found to be beneficial in bed-sores, and in indolent and sloughing ulcers:

℞ Guaiamar..... 1 drachm.
Balsami Peruviani..... 1 drachm.
Unguenti zinci oxidi benzoinati.....q. s. ad 1 ounce.

Butler has used the preparation to some extent in gastrointestinal disorders and in the summer diarrheas of children and infants, with success. It is given in doses of from three to fifteen grains a day.

A New Series of Therapeutic Agents.—

Karl Schwickerath, in the *New York Medical Journal* of September 30, 1899, in a preliminary report, says that compounds of mercury, silver, and copper have found extended application as antiseptics. The chief objections to the use of these germicides are, however, that they are decidedly irritating and that they lower the vital and resisting powers of the tissues. This is due to their chemical affinity for the constituents of cells. Of the operation of antiseptic agents we know very little, but it is believed that the metallic salts enter into combination with proteid substances. This led to the thought that they might be combined with nuclein. Such proved to be the case. The new compounds are found to be readily soluble in water, having a neutral or faintly alkaline reaction. They contain the metals in true chemical combination, and are not precipitated by solutions of albuminous substances. Such a salt as this has slight chemical affinity for tissues—that is, very little chemical reaction — but its physiological properties are retained. Clinical experiments with the nuclein compounds have not only fulfilled all expectations, but have exceeded them. Practically, prolonged investigations have shown that these new compounds possess all the therapeutical advantages of the respective inorganic salts without their disadvantages. The different compounds prepared are:

Nucleol.—A pure nuclein from yeast. It is a white powder, readily soluble in warm water, but insoluble in alcohol.

Mercurol.—A nucleide of mercury, containing about ten per cent of the latter in organic combination. It is a light, brownish-white powder, soluble in warm water, with a slightly alkaline reaction.

In preparing solutions one drachm of sodium chloride should be added to each pint of water, in which the substance is dissolved.

Nargol.—A nucleide of silver, containing about ten per cent of the metal. It is a brownish-white powder, readily soluble in warm water, the solutions being faintly alkaline. It does not coagulate albumin, is not precipitated by alkalies or the ordinary silver reagents. With sodium chloride there is no precipitation.

Cuprol.—A nucleide of copper containing six per cent of the metal. It is a green powder, readily soluble in water.

Ferrinol.—A nucleide of iron containing six per cent of the metal. It is a cinnamon-brown powder, soluble in warm water, with a neutral reaction. It does not coagulate albumin, and is not precipitated by the ordinary reagents for iron. The iron is in a stable organic combination.

The Use and Abuse of the Douche.—

D. B. Kyle, in the *International Medical Magazine* for September, 1899, says that cleansing of the nasal mucous membrane is best accomplished by solutions used in an atomizer or by a douche. The solutions are to be considered from two standpoints: first, that of cleansing, and secondly, their local therapeutic action. Indications for the use of the douche are determined by the character of the secretion, irregularity within the nasal chambers, and whether the process is an acute or chronic one. Nasal irregularity is a frequent contraindication, especially if it is so located as to direct the stream toward the Eustachian tube. In all cases the patient should be instructed to allow the cleansing solution to flow through the nasal cavity, and under no circumstances to use suction. After the nostrils have been irrigated, the patient should not forcibly blow the nose before the cleansing fluid has had time to soften the hardened secretion. At least ten or fifteen minutes should elapse after the use of the douche before this maneuver is permitted. Too much fluid is often employed in this way, which is alone a cause of increased irritation. These fluids should be as warm as can comfortably be borne by the patient. In localized inflammations the douche should not be used, as the irritating effect of the fluids upon the healthy membrane is to be avoided. No definite rule can be given as to the length of time the douche should be used; if continued too long, and the strength of the solution employed is too great, it will keep up the inflammatory condition which we are aiming to relieve. Strong solutions should not be used. After ten days or two weeks the douche should be discontinued for four or

five days, as in this way we may learn if the douche itself is causing irritation. If the douche is followed by marked irritation, headache, pain in the ears, and a general sensation of having taken cold, it should be stopped at once. One of the best alkaline, detergent, and dissolvent solutions is the following:

℞ Bicarbonate of sodium..... 6 grains.
Biborate of sodium..... 6 grains.
Chlorate of sodium..... 6 grains.
Bicarbonate of potassium..... 6 grains.
Distilled water..... 1 fluidounce.

An excellent solution to allay irritation following operations and in acute inflammations is equal parts of the aqueous extract of hamamelis and distilled water, used at a temperature as high as can comfortably be borne. The alkaline solution should be used only in chronic conditions.

Asparagus as a Diuretic.—

H. A. Hare, in the *Therapeutic Gazette* of September 15, 1899, recalls the fact that asparagus tops, when eaten, usually produce a free diuresis. This led him to further experiments with the plant as a diuretic in cases where the urinary flow was scanty. It was not possible to obtain a fluid extract made from the tops, but Parke, Davis & Company prepared a fluid extract from the root stalks. The first case in which he tried the drug was a man 35 years of age, suffering from cirrhosis of the liver, with swelling of the ankles and legs. There was secondary gastric disorder with nausea. A month before coming under observation he had a smothering sensation while lying down, probably due to ascites. The urine contained "one-third" albumin, but no sugar. Under careful treatment with rest in bed the edema improved, but after reaching a certain point no gain was made. The urine varied from thirty-five to forty-eight ounces during a period of fifteen days. On the sixteenth day a drachm of the fluid extract of asparagus was given three times a day. In the next twenty-four hours the amount of urine reached sixty-two ounces, and five days later it reached seventy ounces. The amount varied from fifty-five to sixty-five ounces for the next twelve days. The drug was then stopped, with the result that the urine again fell to between thirty-two and thirty-five ounces. After nine days the asparagus was given a second time over a period of a month, during which time the urine passed varied from fifty to sixty-three ounces. Under the treatment the dropsical symptoms disappeared.

In another case with disordered digestion, a marked edema of the legs resulting from a double mitral lesion, and in which only

twenty to twenty-five ounces of urine was passed in twenty-four hours, the use of digitalis and bitartrate of potassium had no diuretic effect. The bitartrate was then replaced by infusion of juniper berries and acetate of potassium, a pint a day, without effect. Fluid extract of asparagus was then given, and the urine in the course of three days rose from twenty-seven to forty ounces, and remained from thirty-five to forty ounces while the drug was given.

In a case of advanced atheroma with aortitis and probably fatty heart, no marked effect was produced by the asparagus.

The Local Treatment of Corneal Ulcer.—

W. L. Pyle, in the *International Medical Magazine* for September, 1899, says that the first step in the treatment of corneal ulcer is to apply a light bandage and instil a solution of atropine (1 grain to 2 drachms) three times a day. By excluding light and air and avoiding movements of the eyeball, the irritation of the denuded corneal surface is prevented. In some cases considerable pressure is necessary for this purpose. The atropine sets the accommodation apparatus at rest, dilates the pupil, and lessens the movement of the iris and ciliary body. It is essential to disinfect the cornea and conjunctiva. In mild cases boric acid, ten grains to the ounce, used every two hours, will suffice. If the infection is severe and the conjunctiva inflamed, 50 per cent of glycerite of boroglyceride may be used in addition, morning and evening, taking care that it is brought in contact with the denuded surface. Sublimate 1 to 5000, and formalin 1 to 2000, may be used as disinfectants. Holocaine in one-per-cent solution has recently been employed with great success in corneal ulceration. It is both antiseptic and anesthetic. Toluidin has been employed as a collyrium in a solution of 1 to 1000; it is effective as an antiseptic, is not irritating, and has the advantage of outlining by a blue stain corneal abrasion. Iodoform is a valuable remedy in all forms of corneal disease. Calomel in fine powder is a useful application to indolent ulcers. The yellow oxide of mercury is occasionally used, but is of greater value after the ulcer has healed. Moist, hot compresses, applied for a period of twenty minutes every two hours, are of great benefit. In urgent cases local bleeding may be employed by making three or four incisions in the skin and temple and drawing the blood in a cupping-glass. If the ulcer resists treatment and is progressive, the whole infected surface should be cauterized by a heated probe or galvanic cautery. If perforation is imminent, it should be hastened by paracentesis through the floor of the ulcer.

The Treatment of Cerebral Hemiplegia.—

L. H. Mettler, in the *Therapeutic Gazette* of September 15, 1899, in an article on the treatment of apoplexy, gives some excellent directions as to the treatment of the general hemiplegic state. These are quite as applicable to the hemiplegias due to thrombosis as to those which are due to hemorrhage. To preserve the muscles in the hope of their resuming their function if the nerve centers should again assert their power, faradism, massage, and gentle passive movements are to be instituted. Just how soon this is to be done is a matter of opinion; he finds it advantageous to begin early—not later than the first or second week after the shock and subsidence of all signs of inflammation or irritation. Passive movements and the use of the faradic current, just sufficiently strong to produce easy, regular contractions, should be made systematically for a few minutes each day. In connection with massage olive or cocoanut oil should be used. Later it is well to encourage the patient to attempt voluntary movements. In many instances this is impossible, but he should move the well side, and the attendant should raise at the same time the paralyzed limb; oftentimes the patient thinks he is doing this of his own will, and the hopefulness which it imparts is very beneficial. Such simple maneuvers keep alive the cortical memory, so that when the motor areas have partially regained their function, the patient is better able to perform voluntary movements. This reeducation of partially paralyzed muscles is an important part of the physician's duty. Many hemiplegics would have less loss of power if the muscular memory had been preserved by early passive movements in connection with attempted voluntary movements. This applies to aphasia following the shock. An attempt should early be made to awaken the activity of the speech centers. As soon as consciousness is sufficiently restored the attendant should begin the reeducation of these centers, using familiar names of persons and things, and, if possible, get the patient to repeat them. In a certain percentage of cases it is surprising what a rapid recovery is noted where regular exercises of this kind are instituted. In cerebral as well as muscular physiology it is an axiom that exercise increases nutrition and function.

Treatment of Epidemic Cerebrospinal Meningitis.—

G. G. Speer, in the *Medical Age* of September 10, 1899, says that in the treatment of cerebrospinal meningitis three principles are to be kept in mind, namely, relief of pain, cleansing of the alimentary tract, and abstraction of blood from the nerve centers. The

nearer these rules are observed, the greater the success in combating the disease. The most important of these is the relief of pain. Morphine is the best remedy, and it should be given in doses sufficient to produce the desired effect; but as morphine cannot be continued for a long period, it must be substituted by some other drug. The best for this purpose is chloral hydrate and potassium bromide. In addition to the relief of pain, these also cause an anemic condition of the brain, and can be continued a long time without harm. He employs the following prescription:

℞ Chloral. ..... 120 grains.
Potassium bromide..... 120 grains.
Cannabis indica.. ..... 1 grain.
Alcohol, to make one fluidounce.
Mix.

Five to ten drops is given to a child two and a half years old, and repeated every ten minutes until the full effects are secured. A hot pack to the spine or a large linseed poultice, which later may be replaced by a mustard plaster, is applied from the occiput to the sacrum. If mustard is employed, it should be removed before the skin is blistered. The ice-bag he believes in these cases to be worse than useless, though he recommends the application of ice to the head. When symptoms of pressure occur, the iodides are indicated.

Contraindications for the Cold or Brand Bath.—

Modern Medicine for August, 1899, has an editorial under the above title. It says that there is no method for combating febrile states which begins to compare with the cold bath in efficiency and safety when properly employed. It has been shown that the strict Brand method is of great value in typhoid fever, and when employed in the early stages it often reduces the mortality to three or four per cent. The success attending this method has led to its adoption as a routine measure, which will bring this valuable means of treating fevers into discredit, as it has some limitations. Sweating is regarded as one of these; it shows that the fever is subsiding, and that nature is doing all that can be done to lower the temperature. If the skin has a "goose-flesh" appearance, it indicates that there is a constant contraction of the small blood-vessels beneath the skin. To put a patient in such a condition in a cold bath is a hazardous proceeding; it is much better to employ cold applications, which may be preceded by hot fomentations to the skin. In cyanosis the Brand bath is contraindicated, as it is a symptom of cardiac weakness and a sign that the patient is not in a condition to withstand the shock of the sudden and prolonged contact with cold water.

The same thing is true of cardiac weakness, in which there is a dicrotic pulse with weakening of the first sound of the heart. Myocarditis likewise requires restriction in the use of the cold bath, and the sudden cardiac strain resulting from the contraction of the peripheral circulation may easily overwhelm a heart whose muscular structures are crippled by an inflammatory process. Intestinal perforation and peritonitis are also contraindications. Tuberculosis, infancy, and old age are also set down as contraindications.

The Treatment of Pruritus.—

A. F. Plique (*La Presse Médicale*, Sept. 9, 1899) says that pruritus is commonly regarded as an insignificant condition, but its intensity and tenacity sometimes make it a grave malady. Among the most important remedies in the treatment of this condition are baths. These include washing the surface in warm water, vapor baths of low temperature, and ordinary baths. Lotions containing from one-half to one per cent of vinegar are often very useful, as is a solution of tartaric acid of the same strength. Solutions of chloral and carbolic acid in glycerin are useful. In case the skin is broken, it is better to use an alkaline solution, the following formula being good:

℞ Salicylate of soda..... 2 drachms.
Bicarbonate of sodium..... 2 drachms.
Water.....q. s. ad 1 quart.

Pomades are beneficial in overcoming the symptom; among the best of these is one composed of twenty parts of glycerin and one part of tartaric acid. Another contains milk of almonds one hundred parts, and sulphur ten parts.

A pomade composed of phenic acid and cocaine is a very powerful antipruritic:

℞ Phenic acid..... 30 grains.
Oxide of zinc..... 12 grammes.
Vaselin..... 12 grammes.
Cocaine..... 15 grammes.

Bile in Exophthalmic Goitre.—

C. M. Allan, in *The Lancet* of August 26, 1899, has come to the conclusion that bile has other functions than those accorded to it by the physiologist, which according to the latest descriptions include only the office of this substance as a laxative, antiseptic, and as aiding the processes of digestion by emulsifying and perhaps splitting up foods. He describes the case of a middle-aged woman who had been a subject of Graves's disease for ten years. The thyroid was

not markedly increased in size, and the symptoms of the disorder were aggravated at times. One of these exacerbations occurred during an attack of influenza, during which it was noted that the bile was quite absent from the stools. Pig bile was administered in the form of tablets, the amount given reaching from 1500 to 2250 grains a day. This administration was supplemented by hypodermic injections of bile, amounting to from 120 to 360 grains daily. This administration was followed by a marked improvement in the general condition and a lessening of the nervous phenomena, after which the bile was administered twice each week. Notwithstanding the hypodermic use and the very large quantities administered by the mouth, at no time during the treatment did the patient show signs of cholemia.

Soluble Metallic Silver.—

H. C. Wood (*Merck's Archives*, September, 1899) says that silver occurs in allotropic modifications, a fact that was demonstrated ten years ago. One of them is soluble in water. It is by no means a justifiable conclusion, because silver and many of its salts possess antiseptic properties, that the allotropic modifications will be endowed with the same virtues. The allotropic forms of phosphorus are devoid of therapeutic power. The clinical evidence, so far as it goes, is that soluble metallic silver is germicidal, but as yet there is no thorough bacteriological study of its powers. Soluble silver is not actively poisonous. Crédé recommends this substance in the form of an ointment, which is known commercially as argentum colloidale. He claims that it is a non-toxic soluble antiseptic, and it is especially useful in septicemia in all its forms. Soluble silver may be given by the mouth in pill form, or hypodermically, or in the form of injections. If the latter are employed, about ten grains of a 15-per-cent ointment is vigorously rubbed into the skin, which application is repeated on the following day, if necessary.

Injection of Iodoform in Exophthalmic Goitre.—

Pitres, before the French Congress of Medicine (*Lancet*, Aug. 19, 1899), stated that he had for a long time employed injections of iodine in the treatment of this disease, but had not found it entirely satisfactory, as the iodine injections were frequently followed by abscess. Of late he has given up the iodine, substituting for it an ethereal solution of iodoform, which is injected into the substance of the gland. The amount of the solution employed is commonly a

cubic centimeter, and the injections are not made oftener than about once a week. Each injection is usually followed by considerable pain, which subsides in about a quarter of an hour. The effects of this treatment have been most excellent, it being followed by a rapid diminution in the tachycardia, a decrease of the pulsation in the gland, and an improvement in the subjective conditions.

Mechanical Treatment of Ptosis.—

E. B. Hickel, in the *Pennsylvania Medical Journal* for September, 1899, speaks of a mechanical device for overcoming ptosis. He says that the text-books do not mention anything but the surgical treatment, the results of which are rarely favorable, no matter which operation is used. They never restore normal power to the upper lid, and leave the eyes with a loss of expression. The writer has seen five cases, two of which were operated on by Panas's method, but the results were unsatisfactory, as the condition recurred. The device consists of a curved wire frame attached to the upper rim of the spectacle. It acts as a crutch upon which the upper lid rests, projecting into the space between the eyeball and the supraorbital ridge. This bent gold wire can be attached to any spectacle frame, and when once in position it can be adjusted to the anatomical peculiarities of the face and the orbital ridge of the patient.

The Use of Protargol in Ophthalmic Practice.—

E. Praun (*Centralblatt für Praktische Augenheilkunde*, May and June, 1899) says that since the introduction of cocaine no substance of equal importance has been introduced into ophthalmic practice. The reporter has used protargol for the past fifteen months. Its especial value over nitrate of silver is that it is free from caustic properties and can be used without the slightest danger. In many cases where both eyes were affected, he has treated one with protargol and the other with silver nitrate, the results being every time in favor of the protargol. The writer uses the drug in the form of compresses, douches, powders, and salves. He has used it in all forms of conjunctivitis, with or without involvement of the cornea.

Strontium Bromide in the Treatment of Epilepsy.—

Of late the strontium salts have become quite popular in the treatment of epilepsy, replacing to some extent the bromides of the alkaline metals. Recently Smith (*Lancet*, Aug. 12, 1899) gave a report of the treatment of twelve cases of epilepsy with strontium bromide. His conclusions as to the relative value of this salt and

the bromides of sodium and potassium are that a somewhat greater quantity is required of the strontium salt to control the attacks, but the results were markedly in its favor. The relative dose of the bromide of potassium, as compared with the strontium bromide, was as twenty to thirty.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

Expression in Cases of Moderate Constriction of the Pelvic Inlet.—

C. S. Bacon (*International Clinics*, vol. ii, 9th series) calls attention to a procedure that is not new, that is often quite important, and at the same time much less employed than its value merits. He describes a case of labor with a contracted pelvis in which there was delay at the brim. The patient was anesthetized and put in the Walcher position. Pressure was applied directly to the head in the direction of the axis of the inlet. The anesthetic was then withdrawn and further progress of labor left to nature. In about two hours the cervix was fully dilated, and the head at the pelvic outlet. Then the forceps were applied and delivery successfully accomplished.

Expression is not a new procedure; it is probably one of the oldest obstetrical operations. Since the development of scientific obstetrics, expression, as a method of operation for delivery, has been much neglected—the greater certainty of the various methods of applying traction has caused the simpler method to be quite generally overlooked. In 1867 Kristellar described the procedure and gave broad indications for its use. The method acts in two ways: by increasing the pains like other kinds of massage, and by providing an expulsive force which acts in the same way as abdominal pressure. As described by him, the operation consists in first removing the interposed bowel, grasping the fundus of the uterus with both hands, with the fingers behind and the thumbs in front, and pressing down in the axis of the obstetric canal, at first gradually, and then with more and more force, for ten or fifteen seconds. These movements are repeated at suitable intervals of from one to five minutes. In case of sensitive abdomen and uterus, an anesthetic is given. He believed that the method was applicable in the first stage of labor before rupture of the membranes, and that it was indicated in all cases of delayed labor due to inefficient uterine contraction, and in either head or breech presentation.

These indications are regarded by Bacon as too broad, and not accurately laid down. Before the rupture of the membranes it is

of no value. It may be successfully employed in a class of cases which are not infrequent, where after a long labor the head rests against the perineum. The procedure employed in the case reported by Bacon differs from Kristellar's method, in the fact that the pressure is applied directly to the head and is applicable in cases of moderate degree of contraction. This modification is credited to Hofmeyer. It is useless in pelves with conjugata vera of less than eight centimeters. In cases of moderate contraction, between eight and ten centimeters, which are often most difficult to manage, it may be of great value. The writer speaks of a possible danger from Kristellar's method—namely, separation of the placenta. In Hofmeyer's method there is a possibility of rupturing the uterus. In cases where the lower uterine segment is very much thinned, there is a possibility of its rupture by direct pressure of the fingers. Cases in which the method is applicable are those in which there is distention of the lower uterine segment. This danger is avoided to some extent by placing two or three thicknesses of cloth between the abdominal wall and the fingers.

The Melli-Walcher Position.—

G. Perondi (*L'Independénce Médicale*, July 19, 1899) has recently studied anew the effect of position upon the mobility of the sacroiliac articulations and its effect upon the diameters of the pelvis. As early as 1881 Korsch pointed out the fact that mobility in these articulations increased during pregnancy, which had the effect of increasing the diameters of the pelvic inlet but narrowed the outlet. Later, Walcher described a position which consisted of extending the pelvis upon the spine, the position being attained by bringing the pelvis to the edge of a flat surface and allowing the legs to hang down. This is described in obstetrical works as Walcher's position. The maximum of increase in diameters of the inlet is due to the weight of the legs extending the pelvis upon the spine by tension upon the sacroiliac ligaments. The increase is in the transverse diameter of the pelvis and not in the anteroposterior; it amounts to from two-fifths to three-fifths of an inch, and is sometimes increased by first placing the patient in an exaggerated lithotomy position. Walcher's position is especially favorable for the application of forceps, as in it traction is easily made in the pelvic axis, and there is less danger of doing injury to the fetal structures or of rupturing the perineum. The posture is of value in podalic version, and is an important auxiliary in symphyseotomy. The adoption of this procedure, together with other auxiliaries, renders craniotomy and Cæsarian section much less frequent.

Does the Removal of the Ovaries Exert Beneficial Influence on the Subsequent Progress of Malignant Disease?—

E. E. Montgomery, in the *Journal of the American Medical Association* of September 23, 1899, says those writers who contend that the removal of the ovaries does benefit malignant disease have found it necessary to construct a new theory as to the cause of cancer. An analysis of the data upon which this is based leads the writer to the conclusion that instead of the removal of the ovaries exercising an inhibitory effect over the development of cancer, it would, *a priori*, have exactly the opposite effect. While the theory of inhibition would seem to forbid the removal of the ovaries for the relief of cancer, empiricism may demonstrate that the practice is more correct than the theory. An analysis of the results so far obtained does not justify such a conclusion. The results of fifteen operations in the hands of different operators show but one case in which a cure was effected, and even in this one a late report shows a return of the disease. Every experienced operator must have been impressed with the exceedingly erratic course of malignant disease. Some cases which are at the very limit of operability are relieved and go for years without a return of the disease, while others in which there is a very slight infiltration, which is radically extirpated, are followed by a prompt relapse and rapid extension of the disease. He rejects the conclusion that removal of the ovaries can have any curative effect; that it may favorably affect some cases if performed before the menopause is a possibility, though the chance is hardly sufficient to justify so extensive an operation.

The Collective Reports on Glycerinated Vaccine Lymph.—

A. C. Barnes (*American Gynecological and Obstetrical Journal*, September, 1899) for the past ten months has been collecting reports on the value of glycerinated lymph. His inquiry was undertaken under three heads: (1) The value of glycerinated vaccine as a preventive of smallpox; (2) the proportion of successful "takes" in both primary and secondary vaccinations; (3) the relative frequency of complications. The method of inquiry was by circular letter and by personal inquiry. In Baltimore, where for several months there had been a number of cases of smallpox, there were employed by the health authorities and physicians in private practice over 100,000 tubes of glycerinated vaccine. Those vaccinated were periodically observed until the success or failure of the vaccine was determined. In not a single instance did smallpox occur in persons vaccinated with glycerinated lymph. Conservative estimates place

the number of successful "takes" as 95 per cent in primary cases. The vesicles in most cases were typical and uncomplicated by suppurative infection. The number of excessively sore arms did not exceed one per cent. In Minneapolis, in one series of 3145 vaccinations made with glycerinated lymph, there were twenty-nine failures, all being in persons who had been previously vaccinated. In the same city a second series of 8375 vaccinations resulted in four failures in secondary cases. In Cleveland, both glycerinated vaccine and points were employed at the beginning. Results proved the superiority of the glycerinated lymph, after which points were almost abandoned. The report gives a large number of communications from individual physicians, giving the number vaccinated as running from 30 to 300. The successes and failures were about the same in all of them.

The conclusion of the report is that the recommendation of the Marine Hospital Service that only glycerinated vaccine should be employed is substantiated by experiments. This vaccinating substance is free from pathogenic organisms. The measure of protection with glycerinated vaccine is much greater than where points are used. The complications, such as cellulitis and inflammation of the lymph vessels, are rarely noted after the use of the glycerinated product. The proportion of successful primary vaccinations where points are used does not exceed 60 per cent, while with the glycerinated vaccine 95 to 98 per cent is reached.

The Use of an Inflatable Rubber Bag During Labor.—

Macomber, in the *Medical Council* of August 18, 1899, reports having used the rubber bag devised by Champetier de Ribes. This is employed for the purpose of gradually dilating the perineum in advance of the descending head, and thus preventing rupture. When labor is advanced to where the os is dilated about two or three centimeters, the bag is introduced and fully distended by the injection of water. When in position it does not interfere with the movements of the patient, and the descending head gradually forces the rubber pouch down upon the perineum, thus making a continuous and forcible dilatation. This gradual dilatation by a soft yielding body permits of thorough distention without any danger of laceration. If the descent of the head is too rapid, some control may be exercised by pressing the bag upward in this way, allowing a certain amount of time for the dilatation to take place. Again, if the descent is too slow, traction may be made upon the bag, thus distending the inferior strait and correspondingly shortening the

second stage of labor. The writer believes that muscular spasm is one of the most important causes of rupture, and this is largely overcome by this procedure. It permits of sufficient time to thoroughly stretch the muscle fibers, which is done by a comparatively yielding body.

A Rare Obstetrical Accident.—

H. Mallius (*Lancet*, Aug. 19, 1899) describes the case of a primipara in whom he feared eclampsia. On reaching her he found the os fully dilated. The forceps were immediately applied; they slipped over the head with ease, but the handles could not be locked. After several failures it was decided to withdraw them and reapply. The lower blade was easily removed, but the upper could not be brought down. Not being able to withdraw the upper blade of the forceps, labor was allowed to proceed, merely guiding the handle in the axis of the strait. When the arms were brought down, it was found that one arm had slipped through the fenestrum as far as the elbow. As a result there was some loss of power in the arm for a few days, which was gradually restored.

So far as the author knows, this is the only case of the kind that has ever been recorded in the literature.

Extract of Corpora Lutea.—

A. Lebreton (*Lancet*, July 15, 1899) is authority for the statement that the corpus luteum is the essential glandular structure of the ovary, and that the value of ovarian extract is due to the principles derived from the corpus luteum, the latter being a ductless gland. Following this theory he has had capsules prepared containing small portions of corpus luteum. These were administered to patients suffering with the subjective phenomena commonly following the menopause, and which are generally thought to be due to ovarian insufficiency. The results in two cases in which this substance was used were the same as those obtained from the ovarian extract.

FORENSIC MEDICINE.

The Measure of Damages in Malpractice Suits.—

Arthur N. Taylor, LL.B., contributes to the *New York Medical Journal* a series of articles on the law and its relations to physicians. From the issue of September 23 we excerpt that portion dealing with

the measure of damages included in the general liability of the physician to patient.

Damages is defined as "the injury or loss for which compensation is sought," and the measure of damages refers to the amount or extent of such "injury" or "loss," or perhaps more properly to the amount of compensation to be awarded in adjustment of such "injury" or "loss."

In assessing the amount of damages which the injured party should receive to compensate him for the injury or loss he has sustained, three distinct classes are recognized and awarded to suit the merits of the case: First, nominal damages, or some trifling sum, which is awarded when a breach of duty or an infraction of the plaintiff's right is shown, but no serious loss is proved to have been sustained. Secondly, substantial or compensatory damages. These are such as are designed and awarded to compensate for the actual loss or injury sustained. Thirdly, exemplary damages, also termed punitive and vindictive damages. This class of damages exceeds the loss actually sustained, and is given as a kind of punishment to the defendant.

Nominal damages are implied by law when there is shown to have been a violation of the plaintiff's right, but where no damages are shown by the evidence to have been sustained. Nominal damages are also proper in those cases where lack of skill or care is shown, but where it is impossible to distinguish between the consequences of the physical ailment for which the patient was being treated and those of the lack of professional skill and care.

In the case of Becker *vs.* Janinski, the plaintiff had a miscarriage. The evidence showed some improper treatment by the defendant. It also showed that the patient's general health was impaired. There was evidence introduced on behalf of the defendant to show the injurious effect of a miscarriage upon the general health, from which it was argued that the injury complained of to the plaintiff's health was the result of the miscarriage, for which the defendant was not to blame; and, at least, that it was impossible to say the injury was due solely to the alleged improper treatment. Upon this point the jury was instructed that "the defendant not being responsible for the miscarriage, he is not to be made liable for any of its consequences. If liable at all, he is liable only for the effects of his maltreatment of the plaintiff. So that, should you find it impossible to distinguish between the consequences of the miscarriage and the consequences of the maltreatment—should you be unable to find upon the evidence that the plaintiff has suffered any injury distinc-

tively due to maltreatment—you will award only nominal damages against the defendant.''

Substantial or compensatory damages can be awarded only when there is evidence adduced at the trial of a loss or injury sustained from the defendant's wrongful act, upon which suit is brought. In such a case it is the duty of the jury to weigh the evidence and fix such an amount as in their opinion properly compensates the injured party for the loss suffered, as determined from the evidence before them. In estimating such damages it is proper for the jury, when there is evidence before them to justify their so doing, to take into consideration the expenses incurred by way of physician's or surgeon's fees, nursing, and drugs, and medicines which have been rendered necessary by the unprofessional treatment complained of. They must, however, carefully exclude from this item all expenses of the sort necessitated by the original sickness or injury for which the defendant treated the plaintiff. If the expenses for the original illness and those necessitated by the aggravated injury or injuries caused by the act complained of cannot be separated, then this item should not be considered. There should also be considered the loss of time caused by such injury, together with the value of the same, and the physical and mental suffering endured as a direct result of such improper treatment. In cases where the injury is shown to be permanent, the jury may consider its effect upon the plaintiff's capacity to earn money in the future, and also consider future pain and suffering, both physical and mental.

In the case of Barnes *vs.* Means, the plaintiff had sustained fractures of the tibia and fibula; that of the tibia was oblique and near the upper part of the lower third of the limb, while that in the fibula was nearly transverse and was from three to four inches above the ankle-joint. By reason of not applying extension and counter-extension at the proper time, the bones were allowed to lap three-quarters of an inch. This case was twice tried. The first jury assessed the damages at five hundred dollars. On motion of defendant the verdict was set aside, a new trial was had, and the damages were assessed by the new jury at one thousand dollars.

In the case of Wood *vs.* Clapp, a verdict of one thousand dollars was assessed where the evidence showed an improper and unsuccessful treatment of an arm which resulted in permanent disability.

In the case of Smothers *vs.* Hanks, both bones of the plaintiff's arm were fractured near the wrist. The evidence showed unskilful treatment. The arm, hand, and fingers were crooked and stiff—perhaps permanently so. The jury gave a verdict for two thousand

dollars. This, on motion for a new trial, was reduced to twelve hundred dollars, probably by mutual consent of the parties.

In the case of Teft *vs.* Wilcox, the plaintiff, who had suffered from rheumatism and neuralgia in his shoulder, sustained a dislocation of the shoulder-joint. From the improper treatment of this injury the shoulder became permanently disabled. His damages were assessed at two thousand nine hundred dollars.

It was held in the case of Kelsey *vs.* Hay that a verdict of four thousand five hundred dollars was not excessive where the plaintiff was crippled in both legs for life, by the ignorance and mismanagement of his physician. The deformity complained of resulted from improper treatment of fractures in both legs, at what joints the report does not show.

In the case of Quinn *vs.* Higgins, damages amounting to one thousand six hundred dollars were awarded for maltreatment of a fractured leg which resulted in a "false joint."

In the case of Williams *vs.* Poppleton, the plaintiff had received an injury at the ankle, probably a dislocation and slight fracture. There was some evidence of improper treatment; the bones became diseased and the leg was amputated above the knee. The jury found a verdict of nine hundred dollars. Whether this verdict was intended as a compensation for the loss of the leg through improper treatment of the defendant, or whether it was for unnecessarily and improperly prolonging the plaintiff's sufferings in not performing the amputation for a considerable time after it should have been performed, does not appear. It was probably intended for the latter.

The jury awarded damages to the amount of two thousand and twenty-five dollars in the case of Howard *vs.* Grover, where the defendant performed two amputations upon the plaintiff's thigh, both of which were unsuccessful. The first amputation was at the proper place, but the bone was left protruding too far; the second was not shown to have been improperly performed, but it was not performed at the right place. The court, in commenting upon the amount of this verdict, said: "The practice of surgery is indispensable to the community, and while damages should be paid for negligence and carelessness, surgeons should not be deterred from the pursuit of their profession by intemperate and extravagant verdicts. The compensation to surgeons in the country is small in comparison to what is paid in cities for similar services; and an error of judgment is visited with severe penalty which takes from one a large share of the surplus earnings of a long life." The court expressed the opinion that the jury must have been actuated by some "undue

influence" in assessing the amount of damages; he expressed great reluctance to interfere, however, and therefore stated that the verdict might stand if the plaintiff would remit five hundred dollars of the amount assessed.

It is perhaps proper to say that this case arose in Maine, and was tried in 1848.

For the improper treatment of an eye, from which loss of sight in that eye resulted, a Missouri jury gave a verdict of $362.75, evidently a compromise verdict.

For the failure of a physician to discover and repair a serious rupture of the perineum a Maine jury assessed damages at four hundred and fifty dollars. For improper uterine treatment, whereby the neck of the womb became closed, entailing much suffering and considerable expense, a Wisconsin jury assessed damages at three hundred and fifty dollars.

Exemplary damages are given whenever the unprofessional treatment upon which the suit is based is attended with fraud, malice, or gross negligence; and when such fact is shown to the jury by the evidence, they may, in assessing the plaintiff's damages, consider not only the actual expense inflicted upon him, together with the amount proper to compensate him for physical and mental anguish, but may go still further and inflict damages upon the defendant for his intentionally vicious or grossly improper act. Such damages are exemplary or punitive, and are allowable upon the theory that they will act as a punishment to the wrong-doer, and thereby deter others from committing like flagrant acts.

Upon the question of exemplary damages, the case of Brooks *vs.* Clark is instructive. In this case the attending physician tied a ligature around the child's penis, instead of the umbilical cord, at his birth, whereby the glans of the penis came entirely off.

The facts may probably be best gathered from the evidence of the child's grandmother, which was as follows: "Dr. —— was the attending physician. He was standing at the foot of the bed and received the child from its mother. Before receiving the child from beneath the bedclothes, he tied one cord or ligature, and then removed the cover, tied the second ligature, and cut the umbilical cord, when the child was by Dr. —— handed to the witness, who wrapped it in a blanket and sat by the stove trying to quiet it. When the first ligature was tied the child cried out like it was hurt, and continued to cry for about an hour. The doctor then took the child in his lap and examined it, and said that the string had slipped off the navel cord. He asked for another string, which I gave him.

I had given him one at his request before the child was born; both were common wrapping twine. Mrs. C—— assisted Dr. ——, and he tied a string on the navel cord and returned the child to me, and I washed and dressed it and cared for it until morning. The child had spells of crying through the night; all the dressing that was done next day was changing the diaper, and that was done by me. When washing the child next morning I found a string hanging down, and taking hold of it I found that it was tied to the child's penis; it was part of the same cord witness gave to Dr. —— the night before. I had charge of the child at night. When Dr. —— came in I showed him what he had done, and he said it was probably owing to Mrs. C—— being excited and holding up the wrong thing for him to tie. There was but one string around the navel cord when I dressed the child. There was no string tied after the child was dressed; no one had the child before it was dressed but Dr. —— and myself." Upon the trial of the case the jury fixed the damages at five thousand five hundred dollars.

A Gunshot Injury of the Spine.—

W. H. Dial, in the *Virginia Medical Semi-Monthly* of September 22, 1899, describes the case of an 18-year-old negro boy who was shot in the back. The ball entered two inches to the left of the spinal column, opposite the eighth dorsal vertebra. It was followed by complete paralysis of motion and sensation. A few days after the infliction of the wound an exploratory incision was made, but no fracture was found, nor was the ball located. The injury was received May 31, 1898. During the following summer extensive bed-sores developed, the discharge from which was exceedingly offensive. Death occurred thirteen months and twelve days after the injury.

A post-mortem examination was held on the same morning that he died. A section of the spinal column was taken out from the seventh to the twelfth vertebræ. The ball was found to have entered the spinal column between the ninth and tenth dorsal vertebræ, and the cord was completely severed. The question is asked as to what was the immediate cause of death in this case, and its possible medicolegal bearings.

The case falls within the legal rule that does not permit of prosecution for murder or manslaughter, unless death takes place within a year and a day from the time the injury is inflicted. As more than thirteen months elapsed from the date of infliction of this injury, no prosecution could follow. There is no statement as to

which State of the Union this injury occurred in, but probably, from the residence of the reporter, it was in South Carolina. It is possible that in this or other States there may have been a change in the application of the old English rule that death should take place within a year and a day after the infliction of an injury. In Illinois and some other States the old rule generally obtains. It is in spinal injury cases that death may be so long delayed after the infliction of an injury. The abstracter remembers to have seen a case in which an injury of the back—a complete fracture—was followed by death one year and fifteen days after the infliction of the injury. In this case a prosecution would certainly have followed if the death had occurred within the limit.

Glycosuria Following Intoxication with Atropine.—

F. Raphael (*Deutsche Medicinische Wochenschrift*, No. 28, 1899) reports the case of a man 28 years of age, who had been previously well, attacked by a catarrhal conjunctivitis. He was given a solution of atropine, which was used, and he was soon taken to the hospital with all the clinical symptoms of atropine intoxication. There was extreme dilatation of the pupils. He was given a hypodermic injection of morphine, and at the same time the stomach was washed out. Twenty-four hours afterward all symptoms of poisoning had disappeared. An examination of the urine on the day he was received showed sugar amounting to 0.4 per cent. The glycosuria is believed to be due to the atropine, as the person had eaten nothing for twelve hours. The day following the intoxication the patient was given three ounces of cane syrup, which was followed by a considerable elimination of sugar, thus establishing dietetic glycosuria. On the succeeding day he was given a large dose of starch, but it was not followed by the elimination of sugar. The author thinks that in this case the glycosuria is to be attributed to the atropine, and he has obtained experimental confirmation of this fact by administering to rabbits appreciable quantities of atropine, which has resulted in a production of glycosuria, it making no difference whether sugar was included in the food or not.

Making a Post-mortem Without Authority.—

In these pages we have discussed the question of a property right in a dead body, and decisions have been given that a body could not be replevined as property. A case that has recently arisen in Ontario (*Journal of the American Medical Association*, Aug. 19, 1899) has raised the curious question regarding a statutory enact-

ment. In this case a physician was summoned to a patient, and on arriving at the house found that she was dead. He notified the coroner, who directed him to make a post-mortem examination, which he proceeded to do. While this was under way the husband of the deceased entered and forbade further proceedings, and demanded the authority of the physician. He stated that he had the verbal direction of the coroner to perform the post-mortem. It seems that the law in Ontario requires that such orders shall be in writing, but through long custom this rule has been neglected, and such directions have usually been sent by the coroner by telephone. Accordingly, suit was brought by the husband against the physician for trespassing, and in the trial $600 damages was awarded the plaintiff. This verdict has been set aside by the higher court of Ontario on the very good ground that to require a physician to go around and look up the law when asked to perform a post-mortem examination by an official is simply absurd.

Poisoning from the Use of Eserine in the Form of Eye-drops.—

C. R. Dofour (*Archives of Ophthalmology*, No. 4, 1899) reports the case of a woman 35 years of age who had had prescribed a two-per-cent solution of hydrobromide of homatropine, two drops of which was to be used in the eyes every fifteen minutes for two hours. The druggist in filling the prescription made it up with eserine instead of homatropine. The first instillation was followed by violent pain in the eyes and head, but the application was continued. The pain increasing, she attempted to get to the physician's office and fell completely prostrated, so that she had to be carried into a neighboring house. At this time the pulse was weak and slow, respiration was difficult, and there was intense pain in the eyes and head, the pupils being extremely contracted — not larger than a pin-point. Eight applications were made of two drops each, the solution having a strength of two per cent. The quantity of the drug employed was about the sixth of a grain. Of course a large proportion of this was wasted, as is always the case when patients make applications of collyria.

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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Am. J. Surg.

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ORIGINAL ARTICLES.

MILK AS A CARRIER OF INFECTION.

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Milk contains all the necessary elements of food. Its use is almost universal. Directly or indirectly it is the cause of many of the ailments of man. By skimming, or watering, its fat may be reduced to a point no longer fitting it for food, where no other form of nourishment is taken. By use of preservatives which inhibit or retard digestion it may work harm, in many cases, even when other food is taken. Aside from the danger to public health in this direction, we have in milk a vehicle admirably fitted for conveying to man many of the disease-producing microorganisms. Some of these, when introduced into milk, simply live there without increasing in numbers. Others find in milk conditions favorable for further growth. This is eminently true of the organisms producing diphtheria and typhoid fever, diseases frequently communicated in milk.

Any of the water-borne diseases may be carried by milk, and, unfortunately, the most common adulteration of milk is water. This would be bad if the water were pure, but quite frequently the water is badly polluted. It has been shown that by merely washing milk cans in polluted water the milk may be contaminated. There are many ways by which milk may become infected when diphtheria or scarlet fever occurs in a family which is producing milk. The mother, caring for a sick child, may infect the milk in preparing it for the market. The milk may be kept in the house, or in a milk-room communicating with the house in which the patient is ill, and the milk be contaminated by an infected atmosphere. Flies carry infection.

Diphtheria or scarlet fever may be communicated from house to house by the milkman, the infection coming from one of his customers. This may be by means of milk tickets or by milk bottles. The surfaces of pasteboard milk tickets used for some time are quite dirty, and often a little sticky—a favorable place for micro-organisms. I have seen mothers give their babies milk tickets to play with; and babies invariably carry everything to the mouth.

It is quite common for the housekeeper to place her milk vessel out-of-doors ready for the milkman, with the ticket left in the vessel. In some places milkmen are required to use destructible milk tickets, not to be reissued—a practice which should be encouraged. Milk bottles taken into a house where there is diphtheria or scarlet fever may easily become infected, and especially where milk has been ordered for the patient and the bottle has been taken into the sick-room. Unless milk bottles are sterilized, not simply washed, after coming from such houses, they may be the means of introducing disease into some other family.

The diseases so far spoken of all come from the accidental contamination of milk after it leaves the cow. Of perhaps more importance is tuberculosis, in which the milk ordinarily is infected before it leaves the cow.

It may be taken as an established fact that milk, as drawn from the udder of a tuberculous cow, may contain the specific cause of that disease—the bacillus tuberculosis. This organism is the same as that found in human tuberculosis, and tuberculosis may be communicated from animals to man or from man to animals through the medium of this bacillus. There is no unanimity of opinion as to whether the milk of a tuberculous cow will contain this organism if the udder is unaffected. The Royal Commission on Tuberculosis of England, which reported in 1898, leaves the question in some doubt, though calling attention to the fact that a tuberculous cow with a healthy udder may very rapidly take on disease of that organ, and become dangerous. In a report on the Infectiousness of Milk, published in 1895 by the Massachusetts Society for Promoting Agriculture, it was positively shown that milk from tuberculous cows with healthy udders may contain tubercle bacilli. The bacilli in these experiments were found in the milk and identified by the usual staining methods; by feeding to rabbits, calves, and pigs the disease was reproduced. In all cases the freedom of the udders from tubercle was proven post mortem. It may be accepted that a tuberculous cow with a healthy udder may infect her milk; although infection is much more frequent after the udder is involved. The

degree of prevalence of tuberculosis among cattle in the United States is not known. It has been variously estimated at from 10 to 20 per cent; the latter is probably not too high for milch cows.

What measure should be taken to prevent disease attributable to milk? We cannot depend upon competition or the honesty of the producer for healthy milk. There must be supervision of the milk trade, and this belongs to the health authorities. In the first place there must be a legal standard, below which all milk must be considered as adulterated. To insure milk of this standard there must be frequent examinations of the products of the different dairies, and of the supplies of the milk shops. Such examination of milk is fairly well provided for in large cities. The State should look after the examination of samples of milk from smaller towns, where facilities for testing milk are not easily provided.

In considering what measures should be taken to prevent milk-distributed diseases take infections conveyable by milk in which the cow is not at fault. Here the milk as a rule becomes infected because of the presence of infectious disease in the milk-producer's family or in those handling the milk; or by adding water to the milk, or using water for washing milk cans or utensils, which contains the specific organisms of disease.

As there is no practical way of detecting infected milk except by its effect upon the users of it, it is plain that this danger can be guarded against only by systematic, rigid inspection of the dairy itself, and of persons handling milk. The laws of Ohio make provision for such inspection. Section 2133 provides that "The Board of Health may appoint such number of inspectors of dairies, slaughter-houses, shops, wagons, appliances, food and water supplies for animals, milk, meat, butter, and substances purporting to be butter or cheese, or having the semblance of butter or cheese, and such other persons as may be necessary to carry out the provisions of this chapter, define their duties, and fix their compensation; and such inspectors may, for such purpose, enter any house, vehicle, or yard; and the Board of Health shall keep for public inspection a record of the names, residences, and places of business of all persons engaged in the sale of milk and meat, and may require permits, after inspection, to vend either milk or meat." (O. L., vol. 90, p. 91.) This law is imperfectly enforced in only a few cities in Ohio, and is quite generally ignored.

The milk trade can be properly regulated only by enforcing the permit system. Before granting a permit there should be a thorough inspection of the dairy, including the cows, their food and

water-supply, the stables, milk-house, and manner of caring for the milk.

The Congress, for the protection of the District of Columbia, has gone further than this in providing that no dairy can be established within the District without a permit; and this is only granted where the dairy conforms to the requirements of the health commissioners. Such a system should apply to the entire country. In any event permits should be renewed annually, after inspection; and there should be frequent inspections.

The water-supply is deserving of special attention. It is no uncommon thing to find wells in barn-yards used for dairy purposes which are considered unfit for domestic uses. The milk-house should be completely cut off from both stable and dwelling-houses. There should be provision for the sterilization of milk vessels and utensils by boiling water or steam. Little attention has been paid in this country to the construction of cow stables. Frequently they are dirty if not filthy, dark, unventilated buildings, filled with noxious odors, in which milk in open pails becomes contaminated in a short time. In no place that I know of, except in the District of Columbia, have authorities attempted to regulate the construction of cow stables. Such regulation is quite general in many European countries, where matters of ventilation, lightiug, drainage, structural material, etc., are required to be in accordance with prescribed rules.

Filth does not cause infectious diseases, though it may help preserve and propagate them. The greatest danger is from the presence of typhoid fever, scarlet fever, and diphtheria in the families of milkmen, and the accidental infection of their milk product. This is a difficult problem to solve. In some of the best of the large foreign milk concerns handling the milk from many farms, the dairyman is paid for his milk during the whole time he has an infectious disease in his family, but the milk is not used. In this way the temptation to conceal cases is removed. We can scarcely expect this of our milk dealers, at least not for the present.

Physicians are now required by law to report all cases of contagious disease to the local health authorities. A city might furnish to rural authorities a list of names of all persons living in their jurisdiction who furnish milk to the city. It could be made the duty of these local health authorities to promptly notify such city of the appearance of an infectious disease in the family of a dairyman. A heavy penalty should be fixed for selling milk under such circumstances, without the permission of the health authorities of the place in which the milk is sold.

Provision might be made at creameries for using suspected milk in some manner requiring a continued high temperature, which would remove all danger and avoid total loss to the producer. Where the dairyman faithfully cooperated with the health authorities it would perhaps not be necessary, with proper isolation and care of the patient, to stop the sale of milk. As far as possible the interests of the dairyman should be considered as well as those of the general public. By the enforcement of penalties, and by revoking the permits of persons who knowingly violated the laws regulating the sale of milk, the dangers from infected milk could be considerably lessened.

A different line of procedure will be necessary to prevent the sale of tuberculous milk. We have seen that a considerable percentage of our milch cows are tubercular. To what extent the use of tuberculous milk is accountable for tubercular diseases of children I am unable to state. That it is an important cause no one will deny. To prevent the sale of tuberculous milk we must stop the use of tuberculous cows for the production of milk. This has been attempted in some cities and States, but with only partial success. With the tuberculin test it is possible to detect the presence of tuberculosis in the cow in probably 96 to 97 per cent of all cases, but the test does not show to what extent the animal is diseased. No animal with incipient tuberculosis should be used for the production of milk. The State, under its police powers, has the right to provide for the inspection of all milch cows, and to prohibit the use of those shown to have tuberculosis. It may condemn and slaughter such animals for the protection of the public health.

A city may require the dairyman to furnish satisfactory evidence that all cows producing milk which he sells in such city are free from tuberculosis or other dangerous communicable disease. In the case of the city of Minneapolis the Supreme Court of Minnesota decided that the municipality could require that all cows furnishing milk for that city should be shown to be free from tuberculosis by the tuberculin test, and that this is a reasonable method for detecting this disease. We can never hope to stamp out tuberculosis among milch cows in this manner. We may lessen the number of cases, but so long as the conditions which produce bovine tuberculosis remain we will never eradicate the disease from our herds. Cows under natural conditions, in the open, rarely have tuberculosis. It is the dark, filthy, unventilated cow stable that is principally responsible for the spread of tuberculosis among dairy cattle. It is true that the tubercle bacillus, necessary for the production of the

disease, is not generated there, but once introduced it meets favorable conditions, and finds in the tissues of the cow kept amidst such surroundings a soil in which it readily grows. It must not be lost sight of that tuberculosis may be communicated from man to animals, so that if it were possible to at once destroy every tuberculous cow in this country the disease would start again among dairy animals. We must attack this question from two sides; eradicate animals already diseased, and remove the conditions which would cause the remainder to become infected.

In combating the conditions which give rise to bovine tuberculosis there must be a revolution in the construction of cow stables. They must be light, clean, and well ventilated. There must be no overcrowding, a sufficient amount of floor space and air space being allowed for each animal. To properly control this matter of sanitary construction of dairy stables it will probably be necessary for minimum requirements to be made a part of our State laws. Koch and others have shown the wonderful effects of sunlight and even diffused daylight in destroying tubercle bacilli.

The relation of bad ventilation to the production of tuberculosis in human beings is well known. It is no less a factor in causing this disease in animals. There is an excellent reason why cow stables are not ventilated in cold weather. A temperature of 60° will diminish the yield of milch cows as much as 10 per cent. As stables are almost never artificially heated in this country, the entrance of fresh air, because it is cold air, is prevented in every possible way. There is no escaping the conclusion that if cows are to be properly housed in this climate their stables must be artificially heated in winter. In no other way can proper ventilation be secured and the yield of milk be kept up to a paying standard.

The cost of this need not be prohibitive. In an excellent article on Dairy Sanitation by Dr. John C. McVail, medical officer of health of Glasgow, he estimates the cost of apparatus for heating and ventilating a stable large enough for twenty cows would be forty pounds; and that the cost for fuel for six months—taking their average winter temperature at 40° F.—would be about twelve shillings per cow. This sum, forty pounds, was the cost of putting an old stable in proper condition. Apparatus for heating and ventilating a stable could probably be put in at the time of its construction for a less sum, even in this country. Hot water is one of the first requirements of a dairy, and the boiler to supply heat could economically supply hot water.

The true solution of this question of eradicating tuberculosis in dairy cattle is to put it on the grounds of self-interest for both the

consumer and producer. The city of Buffalo is meeting with considerable success in this direction by simply publishing in the daily papers a list of names of dairymen whose cows have been found free from tuberculosis by an inspection by the health department. This inspection is made at the request of the dairymen.

Let the physician and the sanitary officer create a demand for healthy milk by keeping constantly before the public the danger of using milk from tuberculous cows. Enterprising dairymen will meet this demand and force their competitors to do likewise. More than this, the dairyman must be made to realize that a tuberculous cow is worth less to him than a healthy cow; that it is a loss for him to buy such a cow, or to have animals he already owns infected; that by tuberculin he can detect the disease even in its incipient stage, and take necessary precautions to protect himself against loss. He must be led to believe that the extra expense of properly constructing and heating his cow stables will yield an interest on such investment.

The task of educating the dairyman and his customers to this view of mutual interest in the production of pure milk will be, as I have had reason to learn in attempting sanitary reforms in other directions, a long one, and judicious forcing measures must be gently applied until that happy condition is reached.

While the question of tuberculous meat is outside the limits of this subject, I would allude to it briefly from the fact that when a cow has become unfit for the dairy from having become tuberculous it is frequently sent to the butcher. We are learning that incipient tuberculosis in man readily yields to proper treatment under favorable surroundings. This is equally true of tuberculosis in cattle. Our farmers should know that many of their tuberculous cows may be saved and returned cured to the dairy. By frequently testing a dairy herd by tuberculin the disease will be caught in its early stages; and by promptly withdrawing cows but slightly affected, and placing them where they cannot affect others, but where they may find plenty of fresh air and at the same time shelter, many of them will recover. If cows are slaughtered because of tuberculosis, we should adopt the Berlin plan of having the meat placed in the hands of the public authorities to be made safe for consumption by heating, and sold, at a reduced price it is true, so as to prevent a very considerable loss.

To sum up in a few words the measures needed for protection against milk infection, we need frequent inspections, a license to sell, a remodeling of cow stables, and the hearty cooperation of the dairymen.

MALIGNANT TUMORS OF THE EYE.[1]

BY WILLIAM H. WILDER, M.D.,

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Early recognition of growths of the eyeball or its adnexa and their prompt removal are necessary not only for the sight, but frequently the life, of the patient. This paper deals more particularly with those malignant growths which arise in the eyeball, with a brief review of those affecting adjoining structures.

The orbit may be invaded through the infra-orbital fissure by a tumor in the nasal or the pterygopalatine fossa, or through its floor by a growth originating in the maxillary antrum, which, by pressure, causes destruction of the walls of the antrum and the floor of the orbit. A tumor may extend into the orbit from the ethmoid cells or sphenoid antrum. Such growths, according to Virchow, originate, not in the mucous membrane that lines the cavities, but in the underlying bone. Carcinoma of these parts is extremely rare, and sarcoma, which is relatively frequent, is usually secondary. Of 217 cases of tumors of the face reported by Billroth, eighteen were of the orbit. They may arise from the bony walls of this cavity or from the optic nerve or its sheath, from the lacrimal gland or the cellular tissue, the latter being by far the most frequent. A category of tumors arising in the cellular tissue would include cysts such as encephalocele, extravasation cysts, retention cysts, dermoid and other congenital cysts, echinococcus and cysticercus; angioma, lipoma, and enchondroma, although rare, may develop. All these are benign, and if removed early do not recur. A majority of tumors of this region are unfortunately of the connective tissue type, and are, indeed, sarcomata of either the round or spindle cell or fibrous variety. The same specimen may show all the different varieties. Sarcomata usually originate here, but they may appear as metastatic growths, the original tumor being in some neighboring or remote part of the body. They may arise from the periosteum, from the affected tissue of the orbit, or from the fibrous capsule of Tenon. They include cystosarcoma, myxosarcoma, and cylindroma, the latter being particularly malignant. None of these have a characteristic growth, and a microscopic examination is necessary to determine their nature. Upon the walls of the orbit arise osteosarcoma and osteoma, the latter being of slow growth and usually of great hardness.

[1] Read before the Illinois State Medical Society, May, 1899.

The epithelial tumors developing in the orbit are epithelioma, adenosarcoma, and adenoma. They arise either from the lids, lacrimal gland, or from the eyeball, and invade the orbital tissues secondarily.

Among the symptoms of orbital tumors, exophthalmus is the most prominent. It is rarely absent, and is related to the size of the growth. The location of the tumor may be approximately determined by the direction of the protruding eye. Defective motility of the eyeball is due to pressure upon the muscles of the globe or paralysis of certain nerves; this results in diplopia if sight is preserved. Ptosis may also be present. Pulsation of the eyeball may be felt if the growth is an encephalocele, angioma, or orbital aneurism. Disturbances of vision may arise from pressure of the tumor on the eyeball, on the optic nerve, or on the ciliary nerves; as a result of such pressure optic neuritis may develop, followed by optic atrophy. The danger from such growths is great, because of the invasion of the brain either from an extension backward or from metastatic processes. Nothing but a prompt and thorough removal of all the diseased parts gives hope of relief.

The most frequent malignant growth of the eyelids is epithelioma, which generally begins on or near the margin of the lower lid. It may appear as a flat, warty mass of very slow growth, which later shows a superficial ulcer covered with a brownish crust. Such a form may take years to reach any size, and does not appear to be very malignant. The cervical lymphatics are not indurated. Another form develops as a tubercle, of the size of a small pea, which soon breaks down and ulcerates and has a tendency to extend more rapidly and more deeply than the former variety, invading the orbit and causing enlargement of neighboring lymphatic glands. Surrounding the ulcerated area is an indurated zone in which the small epitheliomatous nodules appear. The disease must be differentiated from lupus and syphilis.

Treatment should be prompt and thorough. Complete removal of the growth with the knife, followed by a plastic operation to correct the deformity, is in most cases the safest procedure, although in a few instances I have had excellent results by thorough curettage.

Sarcoma may affect the eyelids, but it is quite rare. It must be differentiated from an ulcerating Meibomian cyst.

The malignant tumors that affect the conjunctiva are usually epithelial, although a sarcoma, which may be of the melanotic variety, is sometimes seen growing at the sclerocorneal junction. Indeed, nearly all malignant growths of the conjunctiva as well as the cornea arise in the limbus, and epithelioma is rather a frequent

type of growth in this neighborhood. Fuchs explains this by the statement that epithelioma attacks those parts where the epithelial covering changes its character. Examples are familiar in the frequency of epithelial growths about the anus, the lips, and the eyelids. An analogous condition is found in the limbus, where the epithelium of the conjunctiva passes into that of the cornea. A small nodule appears at the junction of the cornea and conjunctiva, and grows sometimes with great rapidity. Occurring usually in advanced middle life, it may, according to Saemisch, occur in young individuals. This growth spreads over the cornea, but does not infiltrate it, except when it is quite advanced. Even then it is easily removed from the subjacent corneal structure. It presents a grayish-white, nodulated, sometimes distinctly papillated appearance, and is accompanied at times with severe pain. Often these epithelial cancers are deeply pigmented and of large size, separating the lids and projecting from the palpebral fissure.

Tumors affecting the cornea primarily are, from the nature of the structure, exceedingly rare. As has been said, they usually arise from the margin where the conjunctiva passes over into the epithelial layer of the cornea. Here sarcoma may begin. It is almost invariably pigmented, of the type known as melanosarcoma, and makes its appearance at times in a small pigmented spot which may have been thought harmless. This part of the eye normally contains pigment, more noticeable in a person of dark complexion, in whom a distinct dark ring around the cornea may sometimes be seen. It does not always infiltrate the cornea, but often grows over it, although it can be demonstrated that the epithelial layer of the cornea passes up on to the tumor. It is smooth or lobulated, dark brown in color, and firm to the touch; it bleeds easily because of its vascularity. Often a tumor in this situation is an outgrowth from a similar mass inside the eyeball that has infiltrated the ciliary body and sclera, and extended its ravages to the structures outside of the globe. The prognosis is grave.

The question of attempting to save the eye, when sight is not affected, by carefully dissecting away an epithelioma or sarcoma from the cornea, is an important one. When the growth is small and has not invaded the corneal or scleral tissue, it may be tried with some hope of success, but I am skeptical that anything short of enucleation will suffice to check such malignant growths. It should be remembered that the nodule may be an outgrowth from an intraocular neoplasm. The danger of mistaking such a case for a localized sarcoma of the scleral region is not great if reasonable care is practiced.

Tumors of the iris are not common. Sarcoma of this part may be of the pigmented or white variety; the former is the more frequent and malignant. The disease may occur at any age. As a primary tumor of the iris it is rare, being usually an extension of a growth from a ciliary body. When the growth is of the melanotic type it is easily diagnosed; when of the white variety it may be confounded with tubercle, gumma, or cyst of the iris. The former will probably show a conglomeration of tubercles of a dirty-grayish color, situated at the root of the iris; a gumma is not distinctly circumscribed, and there is a syphilitic history; while a cyst shows a pearlish reflex quite characteristic. These growths may be so small and circumscribed as to make it possible to successfully remove them by an iridectomy. This should be large enough to excise a considerable portion of the healthy iris around the tumor. At the first sign of recurrence enucleation should be performed to prevent further spread of the disease.

Of all tumors affecting the eyeball, those most to be dreaded occur in the choroid, ciliary body, and retina. According to Noyes, tumors of the choroid are met about once in fifteen hundred eye cases. Eighty-five per cent of such tumors are said to be sarcomata, and of these the greater number are pigmented. Sarcoma may also spring from the uveal portion of the ciliary body. Lawford and Collins, in an examination of one hundred and three cases, report six affecting the ciliary body, one in the iris, two affecting both choroid and ciliary body, and ninety-four originating in the choroid behind the ciliary body. Usually the growth attains a considerable size before it is recognized, unless affecting primarily the region of the yellow spot, in which case the loss of vision brings the patient promptly to the physician. It is customary to divide the clinical history of these cases into four stages:

1. A period of early growth before there is any irritation.
2. A period of inflammation.
3. Perforation of the eyeball and extension of the tumor outside the eye.
4. Metastasis.

In the first stage there may be no symptoms unless, as said before, the tumor encroaches on that part of the eye which is used for distinct vision. In this stage there may or may not be increased tension, although as a rule it is increased. If the physician is fortunate enough to see the eye during the first stage, he may, by an ophthalmoscopic examination, discover the growth. A mass is seen within the eye having a comparatively smooth surface, covered by the retina. The retinal vessels are convoluted because of the lobu-

lated tumor, and the retina itself is bluish-gray in color. A careful examination with a bright light may show that the tumor is vascular. The duration of the first stage varies from six months to four years. Fuchs found an average of twenty-one months in sixty-seven cases.

Most authors state that males are affected more frequently than females. Lawford and Collins give 57 per cent of the former to 43 per cent of the latter. The disease occurs generally after the fortieth year; the average age according to Lawford and Collins was 48.42 years. The average age of 259 cases reported by Fuchs was 44.2 years, and of those reported by Freudenthal 49.4 years.

With the beginning of the second stage there are signs of inflammation. The eye becomes painful and tender on pressure; the tension is increased, ciliary region injected, anterior chamber shallow, and all the symptoms of acute glaucoma are present. In this stage there may also be a bulging or staphyloma of the ciliary region, showing that the growth threatens to perforate the sclera. An interesting point, with reference to the subsequent history, is that the prognosis is grave when tension is increased. Lawford and Collins found metastatic processes more frequent in cases having increased tension before enucleation.

In the third stage the tumor escapes from the eyeball and invades the surrounding tissue. The pain and distention now disappear. The mass grows with greater rapidity. Unfortunately many of the cases do not come to the surgeon until this stage is reached, when the chances of a successful operation are diminished. The optic nerve is invaded in at least one-fifth of the cases, and the prognosis is serious.

In the fourth stage metastasis occurs most frequently in the liver, though it may occur in the lungs, brain, stomach, uterus, or other organs. Fuchs found that 18.5 per cent of his cases suffered from metastasis; Hirschberg gave 38 per cent; and Lawford and Collins lost 32.9 per cent from this cause. Local recurrence is the greatest danger; this is diminished if the eye is removed before the tumor has reached a sufficient size to cause increased tension and local irritation. As mentioned above, the tables of Lawford and Collins show that more cases are fatal when the enucleation is performed after the tension is increased than if it is done when the tension is normal. Once the growth has burst through the eyeball the dangers are increased. Fuchs records local recurrence in thirty-one out of 235 cases, or 13 per cent. Freudenthal found local recurrence in six out of twenty-four cases, while Lawford and

Collins noted 8.86 per cent, seven out of 179 cases. The danger of local recurrence is greatest within the first year.

Lawford and Collins, in a report of 103 operated cases, were able to trace seventy-nine; of this number, thirty-nine, or 49.36 per cent, were alive at the time of the report. In twenty of these an interval of three or more years had elapsed since the removal of the primary growth. This gives a percentage of recoveries of 25.31. The averages given by other writers vary from 6 per cent by Fuchs to 38 per cent by Freudenthal. Metastasis has been reported eighteen and even twenty-five years after the removal of the primary growth; whether the tardy recurrence of such processes should be regarded as metastatic is certainly a debatable question. The possibility of such an event, even after the lapse of many years, should make the physician cautious in his prognosis, even though the patient is apparently cured. The therapeutics of this question has naturally been considered in discussing the symptomatology and prognosis; it can be summed up in a few words—remove the eye as soon as possible after the diagnosis has been made.

Glioma is the only form of tumor affecting the retina. It takes its origin from either the inner or outer granular layer, and in its growth may involve all the structures of the eyeball except the cornea and the lens. Histologically, it is closely allied to round-cell sarcoma, being composed of small cells, sometimes with short processes, having a large nucleus and a small amount of protoplasm. It is difficult to demonstrate this protoplasm except on freshly prepared specimens. The intercellular substance is slightly fibrillar, but mostly composed of a semifluid material which gives the whole mass the consistency of brain tissue. The neoplasm is bountifully supplied with blood-vessels. In its growth it attacks the choroid, causing a proliferation of the cells of that structure and separating it from the sclerotic by spreading in the loose connective tissue between these two coats of the eye. In this way it may pass beneath the ciliary body and appear in the anterior chamber. The tumor grows from the retina in clusters, which give it a nodulated appearance often distinctly seen with the ophthalmoscope. Foci of the growth may develop in the vitreous and choroid and spread as independent tumors. After filling the eye, the sclerotic is attacked, its fibrous tissue infiltrated and softened until the tumor escapes from the eyeball and invades the orbit. Even before the mass has attained a great size inside the eye, it may find a way of escape through the point of entrance of the optic nerve, along which it extends. Having escaped from the eyeball the neoplasm grows rapidly in the soft parts of the orbit, and soon presses the lids apart and presents itself

as a hideous fungoid mass which bleeds easily. Death may be caused by extension backward to the brain, or the exhaustion consequent upon the involvement of other parts, either by continuity or metastasis.

Clinically this disease, like sarcoma, may be divided into four stages. In the first stage there is no increase of tension and no irritation. The parents of the child may discover that it cannot see with the affected eye and that there is a whitish reflex from the pupil. This condition was named by Beers, one of the earlier ophthalmologists, "amaurotic cat's eye." An examination with the ophthalmoscope reveals the growth with its nodulated surface, and possibly with the retinal vessels passing over it. Numerous smaller vessels in the tumor may be seen. As a rule the vitreous remains clear.

In the second stage symptoms of irritation and inflammation appear. The eye becomes painful, the tension is increased, the episcleral vessels are injected, the pupil is dilated, the lens and iris are pushed forward, and the details of the interior are no longer distinctly seen. The cornea becomes cloudy and may ulcerate. In the third stage there is perforation of the eyeball and invasion of the orbital tissues. The fourth stage ends the case with either extension along the nerve to the brain or metastatic processes in the lymphatic glands or other organs, chiefly the liver.

This disease is one of early childhood, occurring rarely after ten, and with greatest frequency during the first three years of life. Authenticated cases are recorded by Knapp, Hirschberg, Vetsch, and Lawford and Collins, in which the disease was congenital. In about one-fifth of the cases both eyes are affected at the same time; this symmetrical occurrence not being the result of extension of the growth from one eye to the other along the optic nerve, but an independent affair. The prognosis is fatal unless the eye is promptly removed. If excision is performed during the first stage, before the growth has invaded the optic nerve, there is a chance of recovery. When the operation is performed in the second stage, after irritation and inflammation have set in, very little can be hoped for. After the tumor has extended to the orbit there is little chance, although a few cases of so-called recovery are reported, after complete exenteration of the orbit. Enucleate both eyes if the growth is bilateral, for cases of recovery after double excision for glioma have been reported. Even where there is no hope, it may be the surgeon's duty to remove the eye, and even the contents of the orbit, to relieve suffering.

GENERAL SURGICAL ANESTHESIA AND ANESTHETICS.

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(*Continued from page 912.*)

Tongue Forceps.—A medium-sized double vulsellum will do less harm if carefully used than the ordinary tongue forceps. The latter frequently lacerates and contuses the tissues, while the former makes simply two punctures. In holding the tongue forward care should be taken to avoid cutting the frenum on the incisors. When the tongue is being held by means of forceps a mouth prop will be required; in general the mouth prop can be dispensed with at other times. In a large proportion of cases it is, as ordinarily used, positively detrimental, since by forcing the jaw downward and backward it causes obstruction to respiration. It should be used only when especially indicated and not in a routine way. The best prop to use during anesthesia is the one consisting of a triangular piece of soft rubber with a metallic handle, devised by Dr. John W. O'Neill, of Chicago; or, as Prince suggests, a piece of hard wood, four to six inches long, one inch wide, and one-quarter inch thick, with edges and corners rounded.

Preparation and Administration.—I think we must agree with Frederick W. Hewitt, the anesthetist of the London Hospital, when he says (*Practitioner*, London, October, 1896) that "the giving of an anesthetic is purely a practical matter, and no one is competent to express an opinion upon how it should be given who has not himself had personal experience in the operating-room." One vital point which militates against the practical value of such experiments as those conducted by the Hyderabad Commission, for example, is that in anesthetizing sick human beings factors come into play which are not met with in healthy lower animals. Consequently we must be wary about placing full confidence in deductions drawn solely from laboratory experiments. The post of anesthetist is second only in importance to that of the operator, hence the prevalent custom of relegating the administration to the least experienced physician present at an operation is fast giving way to more rational practices. No one who has not a wholesome fear of anesthetics can become a safe and skilful anesthetist. The skilful anesthetist recognizes that in giving the anesthetic he has his hands full and cannot safely attend to anything else, nor watch the operation, save to be cognizant of its stages. He must be on the alert every instant for possible danger-signals, and he should be able to manage complications when they arise. The post of anesthetist is a post of honor,

and should be so considered by all physicians. I know of few more trying positions than where a surgeon has to watch the anesthesia and do a dangerous operation at the same time.

It is best that all patients who are to be subjected to anesthesia be given the benefit of at least two or three days of preparatory treatment and of observation. The organs of elimination — the bowels, the kidneys, and the skin—should be put in the best possible condition. The urine should be examined carefully for evidences of nephritis or of diabetes, so that extra precautions will be exercised where necessary. The condition of heart and lungs should be carefully determined. The food for as long a time as possible preceding the operation should be of the most nutritious and easily digested kind suitable for the patient, and the feeding should be rather forced than otherwise up to the day preceding operation, in order to bring the vitality to the highest available point, thus enabling the patient to better withstand the shock of the anesthetic and the operation. The day preceding anesthesia the diet should be nutritious and light—either liquid or semiliquid. No food should be given within three or four hours of an anesthesia, but I believe water should be allowed up to within say two hours preceding it; and a cup of coffee taken one or two hours before anesthesia is valuable for its stimulating and sustaining effect. As to the bowels, I prefer that a brisk cathartic be given the second night preceding anesthesia, and none the next night, relying upon a simple enema to complete evacuation of the bowels on the morning of the operation. This plan allows the patient an opportunity to sleep the night before the operation, and does not deplete the system of its fluids; consequently the patient is not so apt to be tormented with thirst and nausea after anesthesia, and the anesthetic and waste products are more readily eliminated. Of course, these preparations cannot be made in emergency cases.

The temperature of the room in which an operation is done should not be above 75° or 80° F., since in very high temperatures the prostration caused by the heat is added to the shock of the anesthetic and the operation.

The patient should be dressed with a view to the nature of the operation, so that no unnecessary disturbance will be required afterward. The neck, chest, and abdomen should be made perfectly free from pressure. Bearing in mind that anesthetics lower temperature, the patient should be protected sufficiently to prevent great loss of body heat. The mouth should be freed of all loose substances. Unless especially indicated, drugs — morphine, atropine, chloral,

digitalis, etc.—should not be given before anesthesia. They tend to add to the danger by masking the real conditions and by the multiplication of poisons in the system. I have tried giving morphine or morphine and atropine before anesthesia, and believe it augmented the postanesthetic nausea. Cocainizing the nasal mucous membrane to antidote the anesthetic, and to prevent reflex disturbances of the pneumogastric and respiratory nerve center in the medulla from irritation of the sensory terminations of the trigeminus distributed in the nasal mucous membrane, is open to the objection that the cocaine constitutes an added danger, notwithstanding assertions that it is perfectly safe. Prince's suggestion that a bland oil may be applied is a good one; and I would add that if a local anesthetic is wanted a safe proportion of guaiacol can be added to the oil. Everything that the anesthetist may require during the anesthesia should be at hand before the anesthesia is begun.

It is of the greatest possible importance that before beginning the administration of an anesthetic the anesthetist gain the complete confidence of the patient, thus being enabled to allay fears which have been conjured up perhaps days and weeks in advance. No one can blame a patient for having a certain fear of the anesthetic and of an operation, things that the majority of patients know so little about and have to take on trust. In persons of average intellect and education the difficulties are not great, but in the ignorant, especially if very nervous or hysterical, it is occasionally impossible to allay the apprehensions of real or imaginary dangers. My experience is that, other things being equal, the greater the degree of fear preceding anesthesia the greater the danger during the narcosis. It is best to anesthetize a patient in a room free from noise, and to do no talking, excepting to the patient, while inducing narcosis; and the anesthetist should invariably have some one within easy reach to aid him in case of emergency. There should be as little disturbance and lifting of the patient as possible after the anesthesia is begun, so as to avoid disturbing the anesthesia in its early stages. Before beginning the anesthesia the anesthetist should carefully observe the pulse, respiration, pupils, color of skin and lips, and the general condition of the patient, mental and physical. The position for the head should be determined by the degree of cervicodorsal curvature. It should rest either upon the table or slightly elevated upon a firm pillow, in such a way as to relax all the tissues of the neck and permit the greatest freedom of breathing. After the patient has become unconscious, the head should be turned

to one side, preferably to the right, and slightly extended. This position tends to prevent falling back of the tongue, allows any excess of saliva to flow out of the mouth, and affords the best opportunity for compressing the phrenic nerve.

The administration of the anesthetic, whether ether or chloroform, should begin gradually. A good way is to have the patient count aloud with the dry mask held above the face for a moment, and then while the anesthetic is being applied drop by drop to continue counting slowly until unconsciousness supervenes. If the amount of anesthetic be increased very gradually there will seldom occur disagreeable symptoms, such as coughing, spasm of the glottis, struggling, etc. Surgical anesthesia is best indicated by a contracted immobile pupil. After surgical anesthesia has been attained, which should occur on an average in from seven to ten minutes, it should be maintained with the least possible amount of the anesthetic. This is seldom done. I am convinced that nearly all of the decidedly bad effects, both immediate and remote, attributed to anesthetics are due either to unnecessary overdosing; to too rapid administration; to faulty preparation of the patient, mental and physical; to bad selection of the anesthetic; to poor quality of the anesthetic substance; to careless after management; or to several or all of these factors combined.

There are two ways of avoiding overdosage which are often neglected: (1) Expedition in getting the patient on the table and ready for the surgeon after narcosis is complete; (2) as rapid operating as is consistent with thoroughness and safety. In other words, *avoid giving the anesthetic a moment longer than is necessary.*

A great deal has been said about the danger-signals that should be looked for during administration of anesthetics, and we find the same difference of opinion as in regard to other features of the subject. The followers of Syme, including the Hyderabad Commission, believe that in chloroform anesthesia the respiration should be watched, while the pulse may be neglected. The general belief in this country has been that the pulse should be watched and that the respiration is of secondary importance. Some lay the grestest stress upon the condition of the pupil, others upon the color of the skin. I wish to emphasize that *every possible danger-signal should be watched for every moment, from the time of beginning the administration until the patient has regained consciousness.* No one who fails to do this, and who is unable to recognize signs of danger when they appear, is a safe anesthetist.

I am strongly inclined to the opinion that the pupilary reflexes

are the best single guide to impending danger. A rapidly dilating pupil indicates impending danger, and a fixed, dilated pupil means extreme danger. The pupil is sometimes modified by the nature of the operation or by suddenly changing the patient's position. A contracted immobile pupil usually indicates safe surgical anesthesia; a pupil oscillating between contraction and dilatation, diminishing anesthesia. The common practice of touching the cornea to determine the presence or absence of complete anesthesia is harmful and should be condemned. The pulse should be constantly under observation, by the anesthetist keeping a finger on one of the arteries about the face or neck. The respiration should be watched with the greatest care. The color of the face, lips, ears, and nose should be constantly observed. An ashen hue of any of these parts, but perhaps especially of the nose, should create apprehension. The anesthetist should be on his guard to prevent sudden increase in the amount of anesthetic inhaled and sudden overwhelming of the patient by it, which may occur from several deep inspirations due to manipulating sensitive or inflamed tissues, stretching of the sphincter ani, etc. Certain patients, especially chronic alcoholics, the nervous, and occasionally the very vigorous, are apt to resist the action of the anesthetic. This resistance, if due to either anesthetic alone, can usually be lessened or overcome by the use of both anesthetics together for a few moments. When ether produces undue irritation of the air-passages, a little chloroform dropped on the mask generally will obviate the difficulty, and when chloroform causes bad symptoms a little ether added for a short time is likely to afford relief. If a patient struggles during primary anesthesia, it is usually bad practice to force the anesthetic. For one thing, apoplexy is not unlikely to occur under these circumstances, especially if the patient be one whose arteries are unelastic. It should be borne in mind that patients in the primary stage of anesthesia are liable to be in a state of imaginative intoxicatiou; and if one believes he is fighting for his life, the application of force will only cause him to struggle the harder. The proper way in most instances is to suspend the administration until the patient is calmed.

Vomiting during anesthesia may be due in some instances to letting the patient come partially out of the anesthetic, or to forcing too large an amount of it upon him. In a large number of cases retching, vomiting, or hiccough can be controlled by compressing the phrenic nerve, the motor nerve of the diaphragm, as suggested by Dr. B. Joos, of Winterthür, Switzerland. In my experience this procedure is almost invariably successful when properly done. Com-

pression is made upon the nerve as it passes over the scalenus anticus muscle, usually on the left side, by placing the thumb just above and parallel to the clavicle between the two heads of the sternocleidomastoid, while the rest of the hand lies upon the chest wall. Pressure should be firm but gentle, and should be continued for a time after cessation of the phenomena, to prevent their return. Failure is apt to attend this procedure unless it is instituted at the first signs of vomiting or hiccough.

The respiration during anesthesia should as a rule be easy and quiet. Anything like snoring suggests either obstruction or too much anesthetic. Embarrassment of the respiration in the primary stage of anesthesia can be remedied by suspending administration for a few moments. In the later stages it may be due to mechanical obstruction, such as dropping back of the tongue or of the epiglottis, collection of mucus in the pharynx or lower air-passages, or to edema of the glottis. It should be remembered that heaving of the chest may mean only "spurious breathing"—*i.e.*, all the reflex phenomena of respiration may be in action, yet no air enter the trachea. I have observed this repeatedly, and it is astonishing how often the anesthetist will fail to grasp the real situation, until the patient has nearly or quite ceased to make any attempts to breathe; and when finally he has recognized the difficulty he not infrequently makes unnecessary maneuvers, wasting valuable time, before he accomplishes the desired result, which perchance may be merely the pulling forward of the tongue. In the majority of instances the tongue may be prevented from dropping back by keeping the lower jaw well forward; and this is done by placing the thumbs on the symphysis, the fingers behind the angle of the jaw on the ramus, and while depressing the symphysis with the thumbs, pulling forward with the fingers so as to bring the lower dental arch in front of the upper, a simple maneuver which I have seen bunglingly attempted scores of times. When keeping the jaws in proper position fails to keep the tongue forward, a forceps should be used.

When the epiglottis drops back it is necessary to introduce the finger into the mouth and lift it away from the glottis. If these maneuvers fail, artificial respiration—preferably by the Sylvester or similar method—should be instituted. If then no air enters the lungs, the trachea should be opened. If the heart becomes weak during the anesthesia, it is well to inject subcutaneously a heart stimulant or tonic, as nitroglycerin, digitalis, strychnine, though for the most part it is best to avoid these drugs save where positively indicated. If amyl nitrite be given, remember it is only the

temporary vasomotor dilator action that is wanted. If pushed beyond this not easily determinable limit it may cause cardiac paralysis.

Methods of treating emergencies may be summarized as follows:

1. Reflex excitation of respiration by external applications—for example, cold or cautery to the epigastrium, ammonia vapor to the nostrils.

2. Reflex excitation of respiration by mechanical means—as rhythmic traction on the tongue (Laborde), or dilatation of the sphincter ani.

3. Artificial respiration.

4. Tracheotomy (when other means fail).

5. Measures counteracting circulatory failure—like posture or rhythmic compression of the chest or abdomen.

6. Cardiac stimulants—as amyl nitrite, nitroglycerin, strychnine, atropine, digitalis, aromatic spirits of ammonia.

7. Bleeding from a large vein to relieve the overdistended right heart (when other means fail).

It should be kept in mind that in the first and second classes the nerves must be sufficiently alive to convey stimuli.

In the majority of cases oxygen, either pure or atmospheric, is the best resuscitant; but in some instances well selected and properly administered drugs are beneficial.

Partial or "Talking" Anesthesia, warmly advocated by Nicholas Senn and extensively employed by him in operations about the mouth and nose, works admirably in a fair proportion of cases. Senn advocates this method instead of Rose's (head dependent) position to prevent blood from entering the trachea. The patient is placed with the head and shoulders raised, so that the body is at an angle of say thirty degrees, and maintained in that position throughout the operation. The anesthesia may be begun with ether, but chloroform will generally have to be used during the operation. Just enough of the anesthetic is given to blunt or abolish the pain sense, but not sufficient to cause loss of control of the voluntary muscles. This enables the patient to keep the air-passages free from blood. The objection to Rose's method is that with the head dependent bleeding is greatly increased. "Talking" anesthesia should not be used indiscriminately. In some cases the pain sense cannot be sufficiently blunted short of surgical anesthesia, and in many of these cases the shock produced by the pain, added to that of the operation and the exhaustion produced by struggling, may determine the death of the patient. Also the liability to apoplexy is increased by the struggling.

I have known death from shock to occur in some cases operated under "talking" anesthesia where it seemed that the operation under surgical anesthesia should not have produced this result. Shock is apt to be greatest in patients who make the most noise and who struggle violently during the operation. Some of these patients have no recollection of having suffered during operation, but many of them say that they suffered terribly. Avoid this method of anesthesia in delicate or sensitive patients, especially for prolonged operations.

The objection to administering chloroform with the patient in a semirecumbent posture does not seem to obtain in "talking" anesthesia, partly because the exercise of the vocal organs and of the entire voluntary muscular system prevents anemia of the brain, and partly because of the small amount of anesthetic inhaled. In well selected cases this method is the best, in some the Rose method is better, while in others preliminary tracheotomy and packing of the pharynx should be done.

The after vomiting of anesthesia can be largely mitigated, if the patient is properly prepared for the anesthetic; if the latter be carefully and skilfully administered; if the patient be transferred from operating-room to bed without much jarring or shaking, and kept perfectly quiet and free from disturbance in bed; and, finally, by freeing the stomach of accumulated mucus or bile. For a long time it was my custom to give the patient at least half a pint of hot water as soon as consciousness had returned sufficiently to permit of swallowing. This either washes the contents of the stomach into the duodenum or emesis occurs, either event doing good. Recently I have tried gastric lavage, as suggested by I. P. Gunby, of Sherman, Texas (*Medical News*, Jan. 21, 1899). This has worked well in my hands, and I believe it worthy of extended trial. Normal saline solution (a teaspoonful of sodium chloride to a quart of water) may be used, and from one to two quarts is sufficient. The soft-rubber stomach-tube is introduced as soon as administration of the anesthetic is suspended, and the stomach washed while the dressing is being applied. During the procedure the patient's body should be sufficiently inclined head downward to prevent fluids from entering the trachea.

Another means for the prevention or control of nausea, introduced by Mackinrodt, is the inhalation of vinegar. It appears to be equally efficacious after ether or chloroform. The simplest explanation of its action is that its pungency stimulates the respiratory mucous membrane and promotes normal secretions, and its soothing

action upon the peripheral nerves of the parts lessens the irritability of the pneumogastric, thereby controlling the reflex condition of vomiting. It is given by saturating gauze or a thin cloth and holding it over the nose and mouth so that the inspired air is laden with its vapor. It should be used immediately upon discontinuing the anesthetic, and may be kept up for hours if necessary by hanging a saturated cloth near the patient's head. It relieves thirst also. This method of treatment is safe, easily applied, always available, and efficient in a large majority of cases. It is my custom to wash the stomach and follow with vinegar inhalations. There has been little trouble from nausea in patients thus treated.

Anesthetic Mixtures have met with conflicting opinions. My own experience is not favorable to them for routine work.

Lawson Tait's mixture (chloroform one to ether two) is held in high esteem by some of the Scotch surgeons. Of 14,181 anesthesias with this mixture there were three deaths, and only one of them could properly be laid to the anesthetic (W. J. McCardie, Birmingham; *Lancet*, London, 1898, ii, page 1621). Dr. McCardie admits that at times during this series of administrations there was great anxiety for patients, when artificial respiration and other means of resuscitation had to be resorted to and another anesthetic substituted.

William E. Burton, of Dublin, summarizes the advantages of one part ether to seventeen of chloroform thus: (1) The ether causes and maintains dilatation of arterioles and capillaries, thus securing (*a*) the needful blood-supply for the nerve centers, including those of the heart and respiration, and (*b*) immunity from the central plethora produced by the immobilizing effect of chloroform on the vasomotor centers; (2) deeper breathing; (3) more powerful heart contractions; (4) a wider zone of safety between full surgical anesthesia and the "fourth stage;" (5) the rapid passing off of the narcosis; and (6) the slight sickness resulting from even a prolonged administration.

A mixture of ether and oxygen is advocated by quite a number of surgeons. W. W. Keen and John Chalmers Da Costa, of Philadelphia (Gould's American Year-Book of Medicine and Surgery, 1897, p. 247), say: "Our experience with oxygen-ether is that it delays anesthesia and never expedites it. It delays it in the same manner air would if mixed in large quantity with the vapor. Further, some cases are not completely anesthetized. We believe in oxygen to arouse patients from ether and prevent unpleasant after-effects, but are not fully persuaded of its value when mixed

with ether as an aid and safeguard to anesthesia. Bryant has noted that it requires a long time to anesthetize with the mixed gas, and the anesthesia may not be complete. Curtis does not find the method an improvement. McCosh thinks the oxygen-ether anesthesia is not obtained for a long time and is apt to be incomplete." I have had no experience with this mixture, but have little faith that it will stand the test of time.

Mixtures of alcohol, chloroform, and ether (Billroth's mixture) are extensively employed, and some consider this mixture a perfectly safe anesthetic. We find reported one death to every 5000 to 7000 anesthesias, which indicates that it is not "perfectly safe." I am inclined to the view that the alcohol acts chiefly as a diluent of the chloroform and ether, and that we really get only the effects of these substances modified by dilution.

Schleich's Mixtures for General Anesthesia.—C. L. Schleich, of Berlin, claims that mixtures of anesthetics of different boiling points are safer than the different anesthetics alone, on the assumption that the absorption of an anesthetic as to quantity depends upon its boiling point. The more volatile an anesthetic the slower will be its rate of absorption. Ether with a boiling point of 93° F. (34° C.) will be absorbed less rapidly than chloroform, the boiling point of which is 143° F. (65° C.). He believed that if an anesthetic could be produced with a boiling point the same as the normal temperature of the blood, the exact amount absorbed with each inspiration would be eliminated with each expiration. He claims that by producing mixtures with maximum evaporation points at different degrees above the blood temperature we can regulate at will the excess which the expiration would not remove, and thus the amount of the anesthetic retained in the blood. In order to accomplish this he added petroleum ether (boiling point 60° to 65° C.) to ether and chloroform in different proportions. His mixtures for inhalation consist of three solutions:

NO. 1, BOILING POINT 38° C. (FOR BRIEF ANESTHESIA).

Chloroform	46.5 grammes (1½ ounces).
Petroleum ether	15.5 grammes (½ ounce).
Sulphuric ether	186. grammes (6 ounces).

NO. 2, BOILING POINT 40° C. (FOR MEDIUM ANESTHESIA).

Chloroform	46.5 grammes (1½ ounces).
Petroleum ether	15.5 grammes (½ ounce).
Sulphuric ether	155. grammes (5 ounces).

NO. 3, BOILING POINT 42° C. (FOR PROLONGED ANESTHESIA).

Chloroform	31. grammes (1 ounce).
Petroleum ether	15.5 grammes (½ ounce).
Sulphuric ether	83. grammes (2⅔ ounces).

The chief advantages which Schleich claims for these solutions are that the anesthetist may be guided, as to the effects of the anesthetic, by the respiration alone; there is no excitement, no tendency to irritate the bronchial tubes; the pulse has a good tension and is never increased, but may be decreased in frequency; and finally, patients awaken more quickly than from ether or chloroform narcosis; and if the solution which has a boiling point at about blood temperature be used, only a few respirations are taken before the patient awakens.

These solutions were received with considerable enthusiasm by a few American surgeons, and a number of favorable reports were made, among them being one from Henry J. Garrigues, of New York (*Medical News*, Nov. 12, 1898), in which he concludes "that they are easily taken; that they may be used in all cases in which general anesthesia is not contraindicated; that anesthesia can be induced in a short time and kept up with small amounts of the fluid; that there is little accumulation of mucus, little vomiting, and hardly any cyanosis; that there is no bad effect on the kidneys; that the heart is not much influenced by them, although somewhat weakened, but that there is some danger in regard to respiration; and finally, that they affect the patients much less than ether or chloroform. I therefore recommend this new anesthetic for general use."

After more extended observation Garrigues, in a letter to the editor (*Medical News*, Jan. 7, 1899), makes this summary: "Thus having had five cases of dangerous respiration among little more than one hundred patients to whom Schleich's mixture was given, I do not feel warranted in using it again in spite of all its excellent qualities, and I hereby beg to revoke the indorsement I have given it verbally and in print."

The *Medical Review of Reviews* (January, 1899, p. 3), in commenting on Schleich's mixtures, says: "His addition of petroleum ether or benzin to sulphuric ether and chloroform was further to facilitate the formation of a mixture or solution of anesthetics which would afford a safer means of absorption. We believe that practically this reasoning is fallacious, because it assumes that these mixtures or solutions constitute a new chemical homogeneous compound which will always be inhaled as one substance in definite chemical proportions, just as a compound salt is one substance when swallowed after solution in water; whereas the fact is that ether remains ether and chloroform stays chloroform during the inhalation, and that the proportion of ether which will be absorbed will depend

upon the mode of administration. . . . Meantime the adoption of benzin is not the adoption of an anesthetic, for Dr. S. T. Meltzer, in a communication to us on his experiments upon rabbits with petroleum ether, by inhalation through mouth and nose, as well as through a tracheal cannula, says: 'Petroleum ether is not a narcotic. If a rabbit was put under deep anesthesia by ether and then ether suspended and petrol ether administered, the lid reflex soon reappeared and the rabbit woke up. The inhalation of pure petrol ether alone soon brings out a distinct tetanus and opisthotonos, to which the animal soon succumbs if the inhalation be continued. If the inhalation be discontinued at the appearance of the convulsions, the animal survives the tetanus, but this is then followed by a distinct paresis of all the extremities. If ether is given with the petrol ether, the tetanus movements are suspended, but not so the paralytic after-effects; the rabbit dies of paralysis of the respiratory muscles.' There is, moreover, a physical reason for doubting the manageability of mixed anesthetics, due to the fact that if two agents of different maximum points of evaporation be mixed together, the more volatile of them will increase the evaporation of the other, by carrying off more of the less volatile one than if the latter were vaporized by itself. Thus more chloroform would be inhaled if mixed with ether than if it were administered separately." These results should be sufficient to make us careful in using the mixture, to say the least.

My own experience with Schleich's mixtures is limited to some fifteen consecutive cases, which number was sufficient to cause me to discard the mixture as dangerous. This series of anesthesias occurred in the autumn of 1898. The anesthetic was administered by the drop method on the Esmarch chloroform mask. In a tonsil-adenoid operation No. 1 mixture was used. No. 2 mixture was employed in the others, which were mostly abdominal operations. The anesthesia was usually a very quiet one—the appearance of the patient more deathlike than in the ordinary chloroform anesthesia. There was perhaps greater tendency to clamminess of the skin. The patients were readily narcotized, and awoke in a short time—perhaps a little shorter time than from ether. After-nausea occurred in quite a large proportion of the cases. It will suffice to report in detail the last case in which I used the mixture, which was that of a sparely built woman of 42, upon whom I did an advancement of the round ligaments (Alexander's operation) for retroversion of the uterus. The No. 2 solution was administered, on an Esmarch mask. I was specially interested in the patient and kept an eye on

the course of the anesthesia throughout. The patient was nervous and apprehensive about the anesthetic and the operation, but not hysterical. The pulse was about 90. She went into the narcosis quietly, and it was quiet throughout. The minimum amount of anesthetic was given which would maintain muscular relaxation. Toward the termination of the operation the face was somewhat pale. The pulse during most of the anesthesia was 75 to 80, regular and fairly strong. As I was applying the dressings the anesthetist remarked that the patient was sweating about the face. The face was pale and covered with large drops of perspiration. The pupils were widely dilated and insensitive to light; the pulse slow, feeble, and intermittent. The patient was immediately placed in the head-down posture and a hypodermic injection of 0.002 gramme ($\frac{1}{30}$ grain) of strychnine and 0.0006 gramme ($\frac{1}{100}$ grain) of nitroglycerin, together with aromatic spirits of ammonia, administered. The pulse almost immediately became stronger and fuller; the pupils remained dilated, though not quite so fixed. She was removed from the table to the cart, and kept in the head-down position during transportation to bed. After she had been placed in bed and surrounded with hot bottles the pulse was about 60, very weak, and still intermittent. Pupils persistently dilated. Application of amyl nitrite to the nostrils was quickly followed by a fuller and steadier pulse, and slight contraction of the pupils, which, however, did not last many minutes. On account of continued sweating she was given a dose of atropine subcutaneously. The sweating soon ceased, the pulse became regular, though weak, and the pupils less dilated. Twenty-five minutes after the patient had been placed in bed the pulse was 82; in thirty-five minutes it was 140; in fifty minutes it was 145, but not intermittent. Meantime she had been given two more injections of aromatic spirits of ammonia, and a half-liter of normal saline solution was administered per rectum. The respiration was regular all the time, though rather shallow. Sixty-five minutes after being put to bed the pulse was still rapid and thready, so 0.66 gramme (10 minims) of tincture digitalis was injected subcutaneously. After about ten minutes the pulse was 134, and within an hour it was down to 120. The color of the face was fair after the first fifteen or twenty minutes, and soon after the atropine was given it became flushed. Length of anesthesia was about one hour. The patient recovered. This was mainly a case of chloroform syncope with secondary paresis of the respiratory center. It satisfied me that the Schleich mixtures are at least as dangerous as chloroform.

I will relate one more experience with mixed anesthetics. It is

the case of a woman aged 27, upon whom I operated April 13, 1899. It was my intention to first curette the uterus and then do an abdominal section for the partial removal of diseased adnexa. This patient was also very apprehensive about the anesthetic, having taken ether by the "smothering method" some years previously. She had a horror of "that smothering feeling." But she was sensible and took the anesthetic quietly. I watched the administration until she was unconscious. The Esmarch mask was used, and the anesthesia started with chloroform. After a few minutes ether was gradually added by the drop method, and the chloroform as gradually withdrawn. While she was still taking a small amount of chloroform I noticed a little frothy mucus escaping from the corner of the mouth; this made me apprehensive of trouble. Nevertheless, the ether was continued, with a few drops of chloroform occasionally. Just as she reached surgical anesthesia and was wheeled into the operating-room she ceased to breathe. The face was extremely pale. I did not wait to examine the pulse, but placed her in the head-down posture and began artificial respiration by the Sylvester method. Mucus threatened to prevent the ingress of air, so much was there of it. The face became purple before we succeeded in clearing the pharynx. Soon, however, the color of the face improved, and she began to breathe. The pupils were at first fixed in partial dilatation. As soon as the color improved slightly the radial pulse was examined and found to be fairly good. A hypodermic of strychnine, 0.002 gramme ($\frac{1}{30}$ grain), was given and preparations for operation continued. After she had come partially out from the anesthetic, chloroform was given alone, but at the moment of reaching surgical anesthesia the same phenomena, excepting the collection of mucus, occurred, and artificial respiration was resorted to a second time. I gave up the curettement and performed the abdominal operation under partial chloroform anesthesia. Every time the patient approached surgical anesthesia trouble would begin, and the anesthetic had to be withdrawn. It required seventy to eighty minutes to do what could ordinarily be done in thirty to forty, as the abdominal muscles were tense nearly all the time. The tubes were occluded and firmly adherent by old adhesions. One ovary and half of the corresponding tube were left in, the latter being fastened open and fixed to the ovary.

This case tends to shake my faith in mixed anesthetics, as I could not feel sure which anesthetic was causing the most trouble. She had taken a greater relative proportion of chloroform than of ether, but I feared the mechanical obstruction from the mucus more

than I did the other phenomena, therefore decided to risk the further administration of chloroform instead of ether.

At the time the patient first ceased breathing she had been taking the anesthetics between fifteen and twenty minutes, so we cannot attribute the difficulty to rapid administration.

These two cases seem to argue against the use of mixed anesthetics, one being a definite mixture and the other an indefinite one. In the one case the trouble appeared to be due principally to chloroform, and in the other to ether.

In mixed anesthesia there is always an element of doubt when trouble occurs as to just what we have to deal with.

CONCLUSIONS.

1. Chloroform almost invariably kills by its effect primarily upon the circulatory system, and ether by its effect primarily upon the respiratory system. There probably are exceptions to both of these rules; consequently hair-splitting discussions on this point are unpractical and useless.

2. In anemia of the medulla the patient should be placed in the head-down position.

In sudden paralytic dilatation of the right heart, as after several deep inhalations of chloroform, the heart should be rhythmically compressed by squeezing the chest; or the patient placed temporarily in the feet-down posture to empty the heart, artificial respiration being constantly maintained.

3. Anesthetics act directly or indirectly upon all the tissues, interfering profoundly with metabolism; and they tend to produce degenerative changes in the tissues, especially those of the vital organs. Of the anesthetics in general use, chloroform is probably most dangerous in this respect.

4. Deductions based upon laboratory experiments are apt to be deceptive, and should be accepted with the greatest caution as applicable to sick human beings, unless they agree with conclusions based upon clinical investigations.

5. As a rule ether produces less circulatory depression than chloroform. It causes dilatation of arterioles and increased capillary circulation, thereby insuring a good blood-supply to the circulatory and respiratory centers and to the heart muscle; consequently these systems are in less immediate danger than with chloroform.

6. Cocainizing the nasal mucous membrane to antidote certain bad effects of anesthetics is not commendable practice.

7. On account of the reduction of body heat by anesthetics, they

should be administered in a warm room, and the patient should be protected from loss of heat so far as practicable by proper covering of the body, by application of artificial heat, and by protection from dampness of the skin. An excessively high room temperature will do harm by adding heat depression to anesthetic—and operation—shock.

8. Ether when properly administered is no more liable to produce nephritis than chloroform, perhaps not as much so. The changes produced in the kidneys by ether are as a rule temporary, while those caused by chloroform are apt to be more persistent.

9. Most of the pronouncedly dangerous effects of ether, and to a less extent of chloroform, upon the kidneys are due to poor preparation of the patient, faulty administration, bad after-treatment, or all of these combined.

10. Postanesthetic nausea is best prevented by preparation and after-treatment which favor normal physiologic tonus, with especial reference to the emunctories. Gastric lavage at the termination of anesthesia, followed by vinegar inhalation, will in the great majority of cases prevent serious disturbance from nausea.

11. The danger from hemorrhage is no greater with ether than with chloroform, perhaps not as great, since the bleeding which occurs from the effects of ether is primary and is more certainly provided against; while the circulatory depression and vasomotor constriction due to chloroform to a great extent prevent primary bleeding and lead indirectly to later hemorrhage.

12. The safety margin between sufficient chloroform for anesthesia and the lethal dose is much narrower than it is with ether.

13. Patients should be well fed with easily digested and non-bulky food to within a few hours preceding anesthetization, and should be allowed water to within two or three hours of it. If this plan is followed shock will be less and elimination of the anesthetic will be more rapid, and with less harm to the emunctory organs. For the same reasons water should be given as liberally as practicable after anesthesia.

14. Machine methods in selecting anesthetics should be avoided so far as practicable, the anesthetic being selected according to the conditions present in the individual case.

15. Any anesthetic, but especially ether, should be given with the greatest caution in the presence of special susceptibility to acute bronchial or pulmonary affections.

16. Further clinical investigation in the use of nitrous oxide is desirable and necessary, in order to establish its status in relation to surgery; but its general employment is not practicable.

17. The majority of inhalers on the market are bad. An inhaler made on the principle of the Esmarch chloroform mask is the cleanest, safest, and best for ether as well as for chloroform. However, the "open method" of administering ether is not practicable in the tropics, in high altitudes, nor in open-air military surgery, on account of too rapid diffusion.

18. The ordinary tongue forceps is a barbarous instrument and is often barbarously used.

19. The mouth-gag can usually be dispensed with; its use is often positively dangerous, from forcing the base of the tongue against the pharynx.

20. The post of anesthetist is second only in importance to that of the operator, and the selection of an anesthetist should be made with great caution where possible.

No person who has not a wholesome fear of anesthetics can be trusted to administer them. Beware of one who believes any anesthetic to be "perfectly safe."

21. The anesthetist should gain the complete confidence of the patient as to his ability and carefulness, so that the mind will be at rest on these points.

22. Patients who greatly fear anesthesia are the ones likely to give the most trouble to the anesthetist.

23. Other things being equal, the intelligent and educated take anesthetics better than those of low intellect.

24. The patient should be kept as free as possible from unnecessary noise and other disturbance during the induction of anesthesia.

25. The pupilary reflexes constitute the best guide to the presence or absence of surgical anesthesia.

26. The anesthetist should watch carefully the pupils, pulse, respiration, and the color and condition of the skin, depending upon no single symptom as a danger-signal.

27. The patient should be carefully watched from the beginning of the anesthesia until fully restored to consciousness.

28. When anesthetics are properly administered patients seldom struggle.

29. Noisy breathing during anesthesia should be the exception, as it generally means faulty administration.

30. The minimum amount of anesthetic should be given consistent with the production and maintenance of the desired degree of anesthesia.

31. Compression of the phrenic nerve will, if properly done, usually control retching and kindred symptoms occurring during anesthesia.

32. The use of drugs preceding and during anesthesia should be avoided save where positively indicated, and if resorted to they should be used with the greatest care. It is best to depend almost wholly upon other means for the prevention of syncope or to resuscitate.

33. Anesthetic mixtures are in general less safe than the "straight goods." One cannot know the relative proportion of the different components that the patient actually inhales.

34. Partial or "talking" anesthesia is advisable in some cases, but should be avoided in delicate or sensitive patients, especially for prolonged operations, unless taken quietly and with apparent abolishment of pain sense.

35. Finally, the subject of anesthesia and anesthetics should be thoroughly treated in medical colleges, and each student required to conduct a number of anesthesias under the supervision of an expert.

103 STATE STREET.

THE TREATMENT OF SYPHILITIC STENOSIS OF THE LARYNX BY INTUBATION.

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Prior to the introduction of the operation of intubation by the method of O'Dwyer, tracheotomy was the operative procedure usually chosen; it was in fact almost the only successful method for the relief of severe and dangerous dyspnea occurring in the course of syphilitic laryngitis either acute or chronic. While the results of the operation of tracheotomy were successful almost to the point of brilliancy so far as the immediate relief of the dyspnea was concerned, yet it was only a palliative measure; the conditions in the larynx on which the dyspnea depended were in no way influenced or modified by the operation. After the dyspnea was relieved by tracheotomy and the danger from asphyxiation was passed, then the ingenuity and skill of the surgeon were again taxed in order to overcome the stricture or remove the granulation tissue which caused the obstruction. Many operative procedures were devised and many instruments invented with the hope of permanently overcoming this stenosis. It is unnecessary to mention the attempts that have been made to relieve laryngeal stenosis by the use of long tubes or catheters passed through the mouth, or sometimes through the nose. Most of the operators depended on preliminary tracheotomy and dilatation of the stricture from below.

Among the more prominent operations may be mentioned those of Asch, Busch, Bergmann, Czermack, Heryng, Macewen, Richet, Trendelenburg, and Schroetter. The best known and probably the most successful of these operations was the one devised by Schroetter, but even in this case the dilatation of the stricture was only possible after a preliminary tracheotomy, the instrument of Schroetter being introduced from below through the tracheotomy wound. Altogether the history of the treatment of chronic stenosis of the larynx was tedious, complicated, and unsatisfactory. The treatment of laryngeal stenosis by intubation is superior to the method of Schroetter, in that the preliminary tracheotomy is not necessary if the consent of the patient can be gained before the operation becomes a *dernier ressort.* The dyspnea is immediately and permanently relieved, the intubation tube dilating or divulsing the stricture, at the same time, by pressure, causing absorption of granulation tissue. In strictures of small caliber a small tube may be first introduced,

followed by larger sizes as the cicatricial bands are gradually dilated or absorbed. The operation can be performed without shock or loss of blood, and there is no danger from erysipelas, septicemia, or pneumonia. Theoretically the advocates of tracheotomy have argued that the danger of inhalation pneumonia is much greater after intubation than tracheotomy; practically this has not been demonstrated.

While the operation of intubation is more difficult in the adult than in the child, it is certainly not one that could be said to require an unusual degree of dexterity or skill. It can be readily performed without an anesthetic, either local or general. It is more difficult in the adult from the fact that the larynx is deeper, and in some cases reached with difficulty by the index-finger in order to properly direct the tube. In the adult we have this advantage, that before attempting the operation the parts may be thoroughly surveyed in the laryngoscopic mirror and a general outline of the topography of the parts made out. This will guide the operator and enable him to select the size of tube that can be successfully introduced. The greatest difficulty is encountered in those cases where a tracheotomy tube has long been worn. In these cases the elevator muscles of the larynx have to a certain extent become inactive, and the larynx does not rise to meet the index-finger as under normal conditions. The length of time an intubation tube may be safely worn has not been definitely determined. In acute syphilitic laryngitis the necessity for the tube will probably not last over a week or ten days. Where the stenosis is due to granulation tissue a considerable portion of the mass is frequently destroyed in the introduction of the tube, and the absorption of the remainder hastened by pressure as well as by constitutional medication. Where the stenosis is due to cicatrices or ankylosis of some of the laryngeal articulations, it is necessary to wear the tube much longer. In these cases the introduction of a small tube at first, followed by larger ones at intervals of two or three weeks, will accomplish the desired results.

After the first few days patients rarely complain of pain from the tube. The principal difficulty in the adult as in the child is nourishing the patient. However, after a few days the adult is usually able to swallow semisolids or even liquids with comparative comfort. The adult intubation tubes are made of hard rubber, as they have been found to be best tolerated by the patient. They do not readily become impacted or covered by the swollen tissues; they cause little injury from pressure; the deposits of calcareous matter which are so common and so annoying with the metallic tubes do not occur with

the hard rubber, consequently they are much less liable to become occluded; they are light and do not corrode, and on the whole are better tolerated by the tissues than the metallic tubes.

Lefferts, in his exhaustive paper before the Tenth International Medical Congress, says that intubation is indicated in the following classes of syphilitic stenosis: (1) For the immediate relief of dyspnea in all cases of acute syphilitic stenosis of the larynx, by mechanically and temporarily affording an artificial passage for the respiratory current through the intubation tube. (2) Facilitating and hastening, by either equitable and prolonged, progressive, or specially directed pressure of the intubation tube, the absorption of acute inflammatory effusion, or the thickening and induration attendant upon the chronic syphilitic inflammation of the larynx. (3) Forcible dilatation and continuous distention of slight and recently organized membranoid or band cicatrices. (4) Progressive dilatation, by a series of tubes, of cicatricial strictures of the larynx subsequently to their incision, by some form of cutting laryngeal dilator. (5) Divulsion and progressive dilatation, the former being made through the larynx, or from below through the tracheotomy wound. (6) In dyspnea due to abductive immobility of the vocal cords dependent upon syphilitic non-suppurative arthritis of the arytenoid articulations. (7) In dyspnea dependent upon abductor paresis, from commencing degenerative processes of syphilitic origin in the abductor muscles themselves, in which the preservation, by means of the intubation tube, of even a small respiratory opening may stimulate physiological movement.

BOOK REVIEWS.

MATERIA MEDICA AND THERAPEUTICS, MEDICAL PHARMACY, PRESCRIPTION WRITING, AND MEDICAL LATIN. By William Schleif, Ph.G., M.D. Price, $1.50. Philadelphia and New York: Lea Brothers & Co. 1899.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS. By Arthur R. Cushny, M.A., M.D. Price, $3.75. Philadelphia and New York: Lea Brothers & Company. 1899.

The work of Schleif forms part of the Lea Brothers' series of pocket text-books. It is a small work and contains little more matter than an average syllabus. As the author states in his preface, it is intended to afford a condensed yet comprehensive text-book and a work of reference in materia medica. That it is condensed is easily shown by the fact that the application of heat, as a therapeutic agent, occupies but twenty-three lines. Massage, we are informed, "is a term used to designate methodical rubbing, kneading, and percussion of the body. The person practicing massage is known as a masseur (male) and masseuse (female). Massage is performed by making regular movements from the extremities toward the center of the body in a way which can only be learned by regular instruction and continued practice. It acts as a stimulant to both nerve and muscle and to many of the functions of the body, assisting the circulation and favoring the removal of waste products. Massage is employed both for its local and general effect in paralysis; in synovitis; in arthritis, sprains, and fractures; in neuralgia; in chronic constipation (abdominal massage); in pelvic disorders of women (pelvic massage). In the 'rest cure' (S. Weir Mitchell) it is combined with rest, isolation, forced feeding, and faradism. It is also useful for its general effect in neurasthenia, nervous prostration, and hysteria."

The above is a fair sample of the extent of the work. It will be seen that the description of this important therapeutic procedure amounts to a mere definition of the word, there being no description of its application and no accurate indications drawn for its use. The same brevity in the treatment of individual remedies is found throughout the book, which contains nothing distinctive, it being practically cast upon the same lines as a half-score of small works on this subject which have been issued during the last two years.

There is a dose table which employs both the apothecaries' measure and the decimal system. There is a table of important poisons and their antidotes, but carbolic acid, the most frequently employed of all poisons, is not mentioned. There is an adequate index, and the book is handsomely issued by the publishers. For undergraduates the book is a good one, but it contains too little to be of much use to the experienced practitioner.

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A much more ambitious work is that of Cushny, which contains 736 pages to supply a want which he has keenly felt in teaching the subject of pharmacology to students who have completed the purely scientific branches of medicine and are beginning their clinical studies. His object has been to bridge over the hiatus which exists between the phenomena occurring in the normal

organism and those which are elicited in the therapeutic use of drugs. The subject, he says, is treated from the experimental standpoint, and the laboratory investigation is made the basis of almost every statement.

The author has adopted a peculiar classification, dividing his work into six parts, which include: (1) Organic substances which are characterized chiefly by their local action. These include demulcents, emollients, simple bitters, volatile oils, skin irritants, vegetable purgatives, vegetable astringents, and anthelmintics. (2) Organic substances characterized chiefly by their action after absorption. (3) Combinations of the alkalies, alkaline earths, acids, and allied bodies. (4) The heavy metals. (5) Ferments, secretions, and the tox-albumins. (6) Menstrua and mechanical remedies. We confess that we do not see the object of such a classification as this; the grouping is practically no better than a simple alphabetical arrangement, since the author states that "in dealing with each drug I have attempted to unify the whole action by using the most distinctive feature as a center around which to group the less important symptoms." It would seem that he might have used the classification based upon the distinctive features of each drug.

At the outset the author discusses stimulation, depression, and irritation, which is an ancient fetish of writers on the action of drugs, and leads to endless confusion in their application. His description of individual drugs and their action leaves little to be desired; for the most part it is clear and concise. The pharmacopœial preparations and the way in which they are made are given, and a condensed bibliography is appended. In discussing the digestive ferments the doubtful utility of pepsin is referred to, and it is affirmed that the gastric juice is almost always capable of digesting proteids, if it is acid in reaction. The author says that pepsin is needed in cases in which the contents of the stomach acidulated with hydrochloric acid fail to digest proteids. It is often administered in other forms of dyspepsia and certainly does no harm, but there is no question that it is entirely unnecessary in the great majority of cases in which it is prescribed. In speaking of taka-diastase, grave doubts are expressed of its value, notwithstanding that it is admitted that it is by far the most powerful of all the amylolytic ferments. The author assumes that the action of taka-diastase is suspended when the acidity reaches 0.1. The older view that the action of the ptyalin of the saliva in starch digestion is suspended as soon as it reaches the stomach is the one adopted; hence taka-diastase could be of little or no value because it would lose its action in an acid medium. Late experiments show that the action of the ptyalin is continued in the stomach if proteid be present; if starch alone be present in the stomach, then the gastric juice will inhibit the action of the ptyalin. Practically, proteid is always present in the stomach mixed with starches, so that the conversion of starches into sugar goes on continuously in that organ. Notwithstanding the assertions of the author, "amylaceous dyspepsia" rests upon a fairly secure experimental foundation.

In a new work upon therapeutics one naturally turns to some later additions. We find an adequate description of the action of the adrenal gland and its possible value in sustaining blood-pressure in such conditions as shock and chloroform narcosis. In the article on anesthetics there is no reference to the importance of falling blood-pressure as showing lessened peripheral resistance of the circulation as a source of danger and death. There is no reference to the antidoting of carbolic acid with alcohol.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare. Vol. III, September, 1899. Philadelphia and New York: Lea Brothers & Co. 1899.

The last volume of Progressive Medicine is the equal of the two which have preceded it. It is divided into four parts; the first and longest is by William Ewart upon the diseases of the thorax and its viscera, including the heart, ungs, and blood-vessels. An extended review of the contribution of Ewart is, of course, impossible, as it includes abstracts of several hundred articles. An examination shows that little of importance has been added to this department of medicine that has not received attention at his hands. It is predicted that a great future lies before radioscopy in connection with diseases of the thorax. The most important paper dealing with operative treatment of the lungs is that of J. B. Murphy, this being the oration on surgery before the American Medical Association at Denver in 1898. Naturally, an extended discussion of pulmonary disease and tuberculosis is found, which gives the latest papers of the past year upon this important topic and deals especially with the open-air treatment in sanatoria, the use of serum and of various medicinal means.

Henry W. Stelwagon has an article of one hundred pages dealing with diseases of the skin. Of the diseases of the skin, hyperidrosis comes in for some discussion, particularly on the value of formalin in its treatment. A peculiar case of chromidrosis, reported by Mitchell and described in MEDICINE, is reproduced. The most important division deals with inflammations of the skin. Among the most striking statements is that regarding ringworm, which is not now believed to be due to a single parasite, though there are two main classes of this fungi, one being small-spored and the other large-spored. It is this varying character of the infection which gives such a wide variation to the effect of individual remedies.

W. G. Spiller devotes about one hundred pages to a consideration of diseases of the nervous system. It is surprising how little there is that is distinctively new that has been added to our knowledge in this department of pathology. A lengthy discussion of the relation of syphilis and tabes shows that the pendulum is again swinging away from the view that tabes is a purely syphilitic disease.

Richard C. Norris contributes the article upon obstetrics, the most important chapters dealing with Cæsarian section, the value of posture in midwifery, and symphyseotomy.

EDITORIAL COMMENT.

THE SELLING OF PATIENTS.

In an article on the surgical commission men and surgical canvassing, Dr. G. F. Lydston, of Chicago, throws an interesting sidelight upon the methods by which certain surgeons acquire business. To test the frequency with which patients are sold, the following letter was sent to nearly all the representative surgeons of Chicago:

—, Aug. 10, 1899.

DEAR DOCTOR—It so happens that I have occasion to refer operations to the city for treatment. I have been sending them to a gentleman who has recently treated me in a way I don't like, and I am therefore desirous of making arrangements with some one else. What portion of the fee do you give the doctor who brings the case; I am free to say that I have always had 50 per cent. This is not too much, because I always know just what a patient can stand and have him worked up for a good fee beforehand. This is a rich farming country, you know. An early answer will oblige me, as I have several cases that ought to be operated on very soon.

It seems almost incredible that a letter expressed in such terms should have been answered, and its proposition accepted by reputable surgeons. We are informed, however, that 60 per cent of the answers received show that their writers were ready to do business upon the plan proposed. There was nothing revolting in the words, "I always know just what the patient can stand and have him worked up for a good fee beforehand." Dr. Lydston enters into an elaborate discussion of the whole question, which from an argumentative standpoint is all right, but it seems that there can be no justification in a man answering such a letter, except to condemn its terms. The fraud is so apparent in the way in which it is expressed that a surgeon who could undertake to do an operation on such terms would hardly have the interests of the patient at heart and refuse to operate in case it were not needed. It is these operations for revenue that are doing so much harm in surgical practice. Will it for a moment be believed that a surgeon who allows a man to make a diagnosis of the necessity of operation and to offer him one-half of the fee will fail to operate when that patient is brought to the city?

Dr. Lydston publishes three letters in which the authors frankly accept the proposition, and three others in which it is rejected most emphatically. One of these is expressed so earnestly that we quote it in full:

CHICAGO, Aug. 14, 1899.

DEAR DOCTOR—Your letter of August 11 received. I am surprised and grieved at its contents. The candor with which you admit your nefarious practice of asking and receiving commissions for patients sent to Chicago for operation shocks me.

In reply to your question, would say that I do not give any portion of my fee to doctors for bringing patients to me. I do not wish doctors to bring cases to me unless they bring them with what I consider the proper motive for the family physician to have, which is the belief that I would render as good or better service to his patient than anybody else.

If I render service to a patient I expect him to pay me for such service, and I do not allow parasites to feed off the products of my labor and responsibility; nor will I be a party in a conspiracy, which I consider to be criminal under the statutes of Illinois, not to speak of its unprofessional character, to obtain money from patients for doctors who have rendered the patients no professional service.

If you render a patient a service you are entitled to your fee, with the patient's knowledge and consent. If you render him no service, you are entitled to no fee.

If a proposition of this kind had come from any other than a medical man, I would not feel it my duty, in declining the proposition, to go into details as much as I have with you; but coming from a medical man I feel it my duty to call your attention to the irregularity and unprofessional character of your proposition and to forcibly object to your abuse of your profession by obtaining money in such a manner. Respectfully, —— ——.

Dr. Lydston is right when he says "there should be a distinct settlement of the commission question. What is ethical and fair for one is so for all. Let the men who give commissions come out and say so; let us have a fair field and no favors; if the consensus of opinion is against the practice, then let the commission men be warned that if their conduct be persisted in, it will put them without the pale of the regular profession."

As an additional contribution to this subject, we would mention the instance of a physician who brought a patient to Chicago, and for nearly two weeks canvassed the surgical field to know where the largest commission could be obtained. The patient had agreed to pay $300 for the operation. The family physician (*sic*) finally secured the services of a young surgeon who had performed but two laparotomies and was anxious to perform a third. The patient lived through the operation, the surgeon received $75, and the physician who brought the case to the city received $225. We very much regret that Dr. Lydston's inquiries were not more extended, and that he did not include other cities in the scope of his investigations, and other departments than operative surgery. We are quite sure that there are specialists in almost every medical field who are guilty of this practice, and we believe that the custom is by no means confined to the city of Chicago

"WHAT A SYSTEM!"

The last Monthly Bulletin of the Department of Health of Chicago felicitates the Department of Health on the fact that after three years' efforts it succeeded in prohibiting the emptying of river and harbor dredgings within eight miles of the shore line.

That sanitarians may be generally informed regarding this great improvement in the public health arrangements of the city, it is necessary to revert to its original sources of water-supply. Like all new towns, water was obtained from wells and from the river and from the lake, when the inhabitants were located convenient to these sources of supply. As the population increased there was a growing contamination of the river. It was originally a shallow stream discharging a small quantity of water, but the exigencies of the harbor made it necessary that it should be dredged to a considerable depth, and when a sewerage system was adopted it was made to empty into the river. Here the sluggish current allowed much of it to decompose, gases were given off, and solid matters precipitated. The pollution of the atmosphere became so offensive that ultimately a canal was built at the sources of the river which carried the current up stream, and the comparatively pure waters of the lake diluted the foul waters of the river and lessened it as a public nuisance. A portion of the city more conveniently located emptied its sewage directly into the lake. As time passed the contamination of the lake water extended beyond the shore; and large sums of money were expended in carrying tunnels under the lake a considerable distance from the shore, in order to obtain a comparatively pure water-supply. The first of these extended two miles out, and a later one was carried out four miles, thus hoping to avoid the shallow, contaminated waters which received the sewage and occasional scourings of the river when an unusually heavy precipitation raised the level of the stream and caused it to flow lakeward.

The river, being a sluggish stream and receiving large quantities of solid matter, showed a tendency to fill up, which perhaps was not unnatural, and it became necessary to dredge it out. One of the picturesque sights of this stream is a steam dredge with an enormous shovel moving on an arm which dips deeply into the river with all the precision of a conscious mechanism and brings up some of the most appalling, foul-smelling, putrefied matter that it is possible to conceive. The most convenient way for the contractors to get rid of this stuff was to float it out on barges into the lake and dump it near the ends of the tunnels from which the city derives its water-supply.

We are thus confronted with the spectacle of one city department spending millions of dollars in securing a pure water-supply, and another department of government dumping the scourings of its great open sewer into this water. One is reminded of the story which is told of a man who had gone to the fourth floor of one of our large office buildings to interview a firm. There he had an altercation and had been forcibly ejected, the proprietor kicking him down the first flight of stairs; reaching the next landing he found another member of the firm, who inquired into the matter, learned the cause, and kicked him down the next flight. Here he met one of the employees of the firm, who assisted him to the ground floor in the same precipitate and inconsiderate manner. Sitting somewhat dazed and trying to gather his confused ideas, when the circumstances dawned upon him, he exclaimed, "What a system!"

THE "FLEXION" STYLE OF MARCHING.

The above caption forms a title of an editorial in a recent issue of the *New York Medical Journal*, which gives credit to the *Army and Navy Journal*, describing this new method of pedal progression in the following terms: "The style is so new that there is no text-book on the market yet, but several French writers give the following general idea of the body movements: The knees must be always bent, the feet lifted no higher than necessary to clear the inequalities of the ground; the advancing foot must be placed flat on the ground, the step being made neither by the toe nor by the heel. The footfall should be noiseless, and the steps at first short and frequent. The body must lean well forward, the back must be straight and the head erect, the chest open and the shoulders low. It is recommended that when at drill a short stick be held with both hands in front of the chest. The lessons should not be more frequent than two or three times a week. A table is given of the distance to be traversed in each of the thirty-six lessons, beginning with three thousand yards and going up to twelve thousand; also showing how in the early lessons ten minutes is allowed for the first kilometer, nine and a half for the second, and seven and three-quarters for the third; these times steadily diminish with each lesson as the pace increases, until finally the first kilometer, or five-eighths of a mile, is traveled in seven and three-quarter minutes, the second in six and a quarter, and the third in five and three-quarters. Now, one kilometer in five and three-quarter minutes is a good six and a half miles an hour." It is stated that a three-months' drill is necessary to learn the "flexion" march.

The *Journal* goes on to give some of the experiments made with this new form of marching, which show that it is much less fatiguing than that usually employed, and it is not a run, as some might suppose from the rapidity with which it carries a person over the ground. The essential feature in running is that both feet are off the ground at the same time, during the stride; this is not the case with this new style of marching. It is stated that in an experiment made with thirty men, two officers, and two sergeants, they covered a distance, carrying rifles, bayonets, and one hundred rounds of ammunition per man with food for one meal, along a hilly road of twelve miles at a rate of a trifle over seven miles an hour.

There is nothing new in this discovery of the French army; this style of marching has been in vogue among the American Indians since they have been known to the white man. The forward stoop of the Indian in walking is favored by his peculiar foot-covering. It has also been noted that a body of Indians in marching have no tread, in the ordinary military acceptance of the term. While they keep step in marching in single file, yet the forward planting of the foot is done so lightly that there is no perceptible jar from the step. It is only when the human foot is deformed by the perversities of the modern shoemaker that walking is made such a difficult and laborious process. The high heels and narrow toes, by which the foot muscles are practically thrown out of use, make it necessary to adopt a more erect stride, with a thrusting forward of the foot and bringing down of the heel as the part which touches the ground first, and in rapid walking necessarily imparts a jar to the entire leg. This style of marching by a body of men produces the peculiar pounding, which when performed in perfect unison endangers the integrity of even the strongest bridges. This leads to the order to "break step" when troops are crossing structures of doubtful integrity. This "flexion," or what should be termed Indian style of marching, is but a reversion to an earlier type, and if it is adopted in military practice should lead to a more perfect foot-covering, one which admits of a spreading of the toes and the exercise of the prehensile power of the foot, the same as does the Indian moccasin.

MURDER OF A "MISSING LINK."

An incident is reported from Bonesteel, South Dakota, which has attracted some attention of late and led to extended comment by the lay press. According to the newspaper reporters, one A. H. Brower,

an itinerary showman, has been exhibiting about the country a creature which was billed in his menagerie as a "missing link." According to the best descriptions which can be obtained of this "individual," it was brighter than a monkey and less intelligent than a man. It seems that the showman in question has made a good deal of money by exhibiting this creature, and the question whether it was a man or monkey has been debated with great earnestness. The debate, now that the creature is dead, will be renewed with interest, from the fact that its master is accused of murder. The erstwhile docile "missing link" had of late been somewhat unruly, and in the course of a struggle the keeper Brower struck the creature over the head with a club, and from the effects of such blow it died. Brower was arrested and bound over to the grand jury. He and his lawyers assert that the creature was a monkey, and that no charge of murder can be entertained. The judge holds that the "link" was human, and that Brower must pay the full penalty for his deed.

The case in question has been discussed by a number of persons more or less versed in comparative anatomy. S. E. Meeks, assistant curator of zoology at the Field Columbian Museum, is of the opinion that the creature was a freak or a degenerate human. He says that "while many of the larger monkeys much resemble man, there are nevertheless fundamental differences between the human and the simian which would prevent the possibility of confusing their identities. The monkeys which most resemble man are the gorilla and the chimpanzee, yet neither of these could on investigation of their anatomical peculiarities be taken for a man. It is my opinion that the 'missing link' in this case was a hideous human freak or a marked example of the degenerate; this, of course, would lessen but not remove the responsibility of the slayer."

Cy de Vry, the animal keeper at the Lincoln Park Menagerie in Chicago, was also of the opinion that the creature in question was a degenerate human, as he said that it had long been the practice of showmen to carry misshapen human beings around the country, billing them as "missing links" or "half animals."

From a legal standpoint the case is of considerable interest, as it involves the decision of what constitutes a human being. As some lawyers have pointed out, the person accused of this crime is in no danger of the penitentiary, as the question is one that falls within the domain of the expert. The jury in such a case could necessarily form no opinion of its own, aside from the opinions of those who have specially studied comparative anatomy. Attorneys are quite

positive that certain experts would form the opinion that the creature in question was a human being, and that an equal number could probably be found who would give the opinion that it was an animal.

An original solution of the whole difficulty was offered by a showman, who said he thought the matter could be settled without the aid of experts, by a simple examination of the showman's books. If the creature was a monkey, he presumably bought it from somebody and should have a bill of sale; if he did not have this, he should be able to prove where and from whom he purchased the curiosity. On the other hand, if the books show that salary was paid to the "missing link," the evidence becomes at once incontrovertible that the thing was human — a human being cannot be bought and monkeys cannot draw salary.

Perhaps this latter solution is as good a rule as experts could give. A definition of a human being is one who is capable of drawing salary. This would probably meet the exigencies of this and similar cases as well as any that could be formulated.

UNIFORMITY IN THE STATE REQUIREMENTS FOR ADMISSION TO THE MEDICAL PROFESSION.

A recent action of the Wayne County (Michigan) Medical Society was the appointment of a committee of five to investigate the desirability of uniform medical practice acts throughout the United States, and to gather such information as would be valuable in furthering such a movement. A blank was prepared containing seven questions, which was sent to the different States and Territories. Three of these questions were as follows:

"5. Would you be inclined to consider favorably the plan of reciprocity with other States or Territories which have practically the same requirements for license as your own State?

"6. Would you join in the efforts in working out a memorandum to be presented to the legislative bodies of the different States with a view of introducing a bill, and would your Secretary cooperate with us?

"7. Have you any suggestions to make?"

Favorable answers to questions 5 and 6 were received from thirty-nine States and Territories. Four unfavorable answers to question 5 and one unfavorable answer to question 6 were returned, but they were accompanied by explanations which lead the committee to hope that the difficulties which at present prevent a favorable answer could be overcome.

There is no good reason why this reform should not be adopted; after a bill has become a law in several States, its general indorsement would make it much easier to secure its passage, and it would facilitate the entrance into practice of those removing from one State to another, particularly if it involved the recognition of the examination held in one State by that of another. The same plan has been adopted by the American Bar Association, who carefully prepared the bill dealing with negotiable instruments. This was passed by the last Illinois Legislature, and we understand that it has become a law without change or amendment in nearly one-third of the States of the Union.

TREATMENT OF LUPUS BY X-RAYS.

Frequently we have observed in the periodical medical literature references to the use of the *x*-ray in treatment of chronic eczema. An article not long since described a case of chronic eczema of the hands, in which there was thickening of the epidermis, induration of the skin, and a scaly condition. This was treated by seven exposures to the *x*-ray, which were followed by a prompt recovery. Doubtless the *x*-ray used in this way is supposed to act by stimulating the nutrition of the parts on the same plan that jequirity is used in chronic inflammatory induration of the eyelids. The use of the *x*-ray for this purpose is dangerous. We do not know just how deep its effects may be, as in numerous cases it has caused profound trophic disturbance and deep ulceration. We have no means of knowing to what extent the *x*-ray may destroy the integrity of the tissues, and therefore to use it in lupus, eczema, or other conditions we are employing less safe remedies than others of equal efficacy. If a screen is used and the patient separated a considerable distance from the tube, as should be done when making an examination with the *x*-ray, then the stimulation would be very much less; and without this precaution the danger of deeply destroying the tissues is very great.

ABSTRACTS.

MEDICINE.

Heredity.—

A. C. Abott (*Hygiene of Transmissible Diseases*, 1899), in discussing the question of heredity as a predisposing factor in disease, states that it manifests its influence more through the transmission of a peculiar habit of body than by the transmission of disease itself. In the modern sense inherited predisposition to disease implies a congenital condition that is peculiar to the idioplasm of the individuals of certain families, a condition that inclines them to this or that particular form of malady. For instance, in some families we observe a peculiar tendency to nervous diseases, as to epilepsy or insanity; in others to cancers and tumors; in others to scrofula, tabes, and other tubercular manifestations. The rheumatic and gouty diatheses and syphilis belong also to this category. Again, families are encountered that are endowed with a marked predisposition to acute diseases, while in others there is an equally marked resistance to them. In short the inheritance of a tendency to or immunity from disease is due fundamentally to the same processes through which peculiarities of a physical, moral, or mental nature are transmitted.

The question concerning the direct transmission of disease from parents to offspring is one over which there has been a great deal of controversy. With regard to certain diseases, such as syphilis and some of the acute infections, there can be no doubt that such a transmission occurs; but in connection with tuberculosis there is still more or less disagreement. The weight of evidence contraindicates the probability of tuberculosis being often directly inherited, and while it is impossible to deny the intra-uterine existence of the disease, yet hereditary tuberculosis must be looked on as a rarity. The part played by heredity in the dissemination of this disease is more often observed in the transmission of a generally enfeebled constitution, with a special predisposition to this particular form of infection. It is manifest that through the intimacy existing between tubercular patients, particularly mothers, and their offspring that are congenitally endowed with this predisposition, there are abundant opportunities for accidental infection. Fagge calls attention to the frequent impossibility of distinguishing

between hereditary and accidentally acquired tuberculosis. On the other hand, Baumgartner favors the opinion that tuberculosis is frequently inherited, and that the virus lies dormant until after the period of active infantile tissue development, when it exhibits its pathogenic properties.

The relative insusceptibility to disease, like predisposition to disease, is a property that is inherent to the germ-plasm of the individuals and their progenitors. It is not probable that the comparative immunity from or the increased resistance to a disease that is conferred upon an individual by a single non-fatal attack of that disease is transmitted to his offspring, any more than are the numerous other quickly acquired traits or characteristics. At least, we have no evidence in favor of such a view. Important light has been shed upon this phase of our subject by the brilliant researches of Ehrlich and certain of his followers in these interesting investigations. Ehrlich has shown that acquired immunity from poisons that are in many respects analogous to those concerned in the morbid phenomena of infectious diseases is not transmissible from parents to offspring, in the way that physical and mental peculiarities are handed down—in fact, they are not inherited at all; but that for a temporary period during nursing the immune mother conveys to the suckling, through the milk, a substance that serves to protect the offspring from the disease from which the mother is immune. The protection is not permanent, but ceases with, or a very short time after, the cessation of nursing. Moreover, this protection is maternal, the father taking no part in it—a state of affairs contrary to what we know to be the case with regard to the inheritance of physical, moral, and mental characteristics.

It is more than probable that the observation of Ehrlich, made upon animals, may have an important bearing upon the phenomenon in human beings.

Cyclical or Periodical Vomiting.—

A. M. Blodgett (*Boston Medical and Surgical Journal*, Sept. 28, 1899) says that cases of periodical vomiting are seldom seen, or at least seldom reported. His patient was a boy of 13 years. There was neurotic heredity on the father's side. He was a large, sturdy youth, older than his years, and was precocious in his mental and physical development. He was indulged by the family and was decidedly "freaky." The appetite was usually good, and at times enormous. The digestion and sleep were normal and bowels active. There were recurrent periodical attacks of vomiting of protracted

and stubborn character, occurring at regular intervals of about four weeks, and lasting from two days to a week on each occasion. The attacks were preceded by a prodromal period lasting three or four days, during which the patient would be languid, pale, and spiritless, with gradual loss of appetite, constipated, and the temperature moderately elevated. Several of these attacks were thought to be beginning typhoid. On each occasion, after a period of nausea and headache, would come vomiting of a paroxysmal character, in which immense amounts of fluid were thrown up, mixed with food which had been ingested hours and sometimes days before. In the vomited matter were found pledgets of wool, lint, pieces of string, feathers, and other objects which had been swallowed by the patient just preceding the attack. For some time after the second observed attack the patient was carefully watched during the interval between the paroxysms. It was noted that for about two weeks everything would go on in a normal manner, when there would be an uncontrollable inclination to swallow incongruous substances, accompanied by irritable temper and moral perversion. These phenomena were soon recognized as indications of an approaching attack, and treatment was instituted; this consisted of putting the patient to bed and emptying the stomach, which always brought up substances previously swallowed. The relief obtained through this procedure was so great that the patient voluntarily asked that an emetic be given each time he noticed the return of his peculiar attacks. Under tonic and moral treatment the attacks gradually grew less frequent and finally ceased altogether.

The Practical Value of the Determination of Indicanuria.—

H. G. Wells, in the *Western Clinical Recorder* for September, 1899, says that indican is present in the urine in sufficient quantity to be detected during simple constipation, the amount varying somewhat, according to the duration of the fecal stasis. Obstruction of the large intestine produces a marked indicanuria and obstruction; of the small the most intense reaction. Large quantities of pus produce a reaction which probably varies with the amount of absorption. In carcinoma of the stomach there is usually a reaction when the disease is advanced, but it is not marked until after the functions of the organ are impaired. Epilepsy and neurasthenia are marked by a varying degree of indicanuria. Very few of the cases in which this substance is abundantly present in the urine are difficult of diagnosis, as they almost invariably present characteristic symptoms. As a symptom of diagnostic value it is

lessened in importance by the fact that it is difficult to eliminate those cases in which it is caused by fecal stagnation; in cases of constipation, indican is present in the urine even after the bowels have been flushed or freely moved by cathartics. While its diagnostic value in carcinoma, strangulated hernia, and suppuration is slight, in cases of intestinal obstruction, volvulus, and intussusception the testing of the urine for indican is of great value. A case presenting severe abdominal symptoms in which such conditions are suspected, giving a marked reaction, would probably be due to obstruction and not to simple intestinal colic or adynamic ileus.

The test is made by taking equal volumes of urine and strong hydrochloric acid in a test-tube, to which mixture a small quantity of some oxidizing agent is added, the most valuable being the peroxide of hydrogen. If too much of the latter substance is added the indigo blue which is formed, and to which the coloration is due, is bleached. When the maximum blue color is obtained, about one-half volume of chloroform is added to the mixture, which dissolves out the indican and intensifies the reaction. A certain experience with the test is necessary to judge of the amount of indican, which is based upon the intensity of the blue color.

Infectious Endocarditis Treated with Antistreptococcic Serum.—

Laignel La Vastine, in *La Presse Médicale* of October 4, 1899, describes a case of infectious endocarditis in the course of puerperal fever treated by antistreptococcic serum, followed by recovery. The patient was 24 years of age and entered the hospital May 10, delivery having taken place on the first of that month. Since that time the condition of the patient had grown progressively worse. The skin was yellow, the lips discolored, the tongue coated. Temperature was high, accompanied by pain in the abdomen. Sulphate of quinine was given, and large injections of boiled water, with ice to the abdomen. The following morning the pulse was rapid and small, the action of the heart feeble, and a systolic murmur had developed, heard loudest at the apex. The Widal reaction was negative. A bacteriological examination of the blood showed short chains of streptococci with occasional staphylococci, which confirmed the diagnosis of endocarditis. May 18 twenty cubic centimeters of antistreptococcic serum was injected into the cellular tissue of the abdomen, and all other treatments excluded, with the exception of the vaginal irrigation. That evening the pulse was less frequent. On the following morning the stupor had diminished, the tongue was less coated, and the systolic murmur not so pronounced. On

the 20th an injection of twenty cubic centimeters of Hayem's artificial serum was given. This was followed on the 21st by a second injection of twenty cubic centimeters of antistreptococcic serum. On the 22d the general condition of the patient had much improved, and on that day fifty cubic centimeters of artificial serum was injected. This was repeated on the 23d. On the 27th the cardiac murmur was no longer heard, the tongue had cleaned, and the appetite returned. From this time convalescence was rapid.

A Simple Method of Distinguishing the Colonies of Typhoid Bacilli from the Colon Bacillus.—

J. A. Case, in the *Philadelphia Medical Journal* of October 14, 1899, says Piorkoski has succeeded in distinguishing the typhoid bacillus from the colon bacillus by a specially prepared culture medium. This is made by taking 100 parts of urine that has undergone the ammoniacal fermentation, to which is added 0.5 parts of peptone and 3.3 parts of gelatin. The whole is heated over a water-bath. After one hour filter and put into test-tubes, and sterilize in the usual manner. The sterilization is repeated for ten minutes on the following day. In employing the test the stool of a patient is first rubbed up in a mortar, and three tubes are taken, which are inoculated as follows: the first tube by the contents of two platinum loops; the second tube is inoculated from the first, using four loops, and the third by six or eight loops from the second dilution. The contents of each tube is then sterilized and poured in Petri dishes and placed in a cool place until the gelatin is solidified; it is then placed in an oven and kept at a temperature of 22° C. for twenty-four hours. At the end of this time the typhoid colonies are seen as transparent filamentous bodies alongside of the coli colonies, which are rounded, with well defined edges. Piorkoski claims to have found the typhoid colonies as early as three days after the beginning of the illness, and he claims that they may be demonstrated in every case. Twenty-six cases have been tested, in all of which the results of the test were confirmed by the subsequent clinical history.

Headache and Eye Affections.—

S. D. Risley, in the *Journal of the American Medical Association* of September 23, 1899, published a paper read before the neurological section of the Association upon the relation of headache and eye affections. He comes to the following conclusions: (1) Abnormalities of the ocular apparatus are in a large group of patients the sole

and sufficient cause for headache. (2) These abnormalities of vision may be the unsuspected cause, and therefore the absence of symptoms obviously referable to the eyes does not exclude them as a cause of headache, insomnia, vertigo, *petit mal*, chorea in children, and certain stomach derangements. (3) The recent or sudden development of symptoms, after attacks of severe illness, as typhoid fever, the exanthemata, etc., or in association with more or less acute exacerbations of some general dyscrasia, is not sufficient evidence against ocular participation in causing the symptoms. (4) The participation of the eyes as a cause of headache can be positively excluded only in the absence of ocular disease or after the most painstaking correction of any existing error of refraction or abnormality of binocular balance. (5) For the relief of reflex symptoms accurate corrections are essential, and these can be secured only by the more or less prolonged use of a strong cycloplegic. (6) Immediate relief by these corrections in a large group of patients is not to be expected, since the pain is frequently due to associated pathological conditions of the fundus oculi, and these require time for cure.

Epithelioma Occurring in Psoriasis, and its Possible Relation to the Administration of Arsenic.—

M. B. Hartzell, before the American Dermatological Association (*Boston Medical and Surgical Journal*, Oct. 5, 1899), reported the case of a woman 35 years of age who had been affected with psoriasis since the age of 14 years. On the outer side of the left heel there was an ulcer two inches in diameter, with shallow edges and a deep center. Palms, soles, and elbows contained patches of psoriasis. In the left groin was a tumor the size of a small orange. The patient had been given arsenic in considerable doses for long periods of time. After a time there was deep ulceration of the tumor in the left groin, forming a deep, fungating, foul ulcer, which discharged abundantly. More or less continuous fever, loss of appetite, and rapid emaciation soon ensued, and the patient died in two months.

Ten cases of associated epithelioma and psoriasis have been reported. In all of them the psoriasis was of quite long standing, and in all but three there was some form of keratosis. In all in which mention is made of treatment—eight out of eleven—arsenic had been given in considerable quantity over a long period. In the discussion which followed it was held that the epithelioma was due to continued irritation produced by the keratosis, and it could not be attributed to arsenic. Hartzell maintained that the keratosis was due to the arsenic.

Bovine Tuberculosis.—

J. G. Adami, in a paper before the Canadian Medical Association (*Canada Lancet*, September, 1899), made the assertion that tuberculosis in cattle was on the increase. He stated that there was evidence of infection from individual members of a herd to others, and the introduction of a single case of tuberculosis in a herd has been immediately followed by the appearance of tuberculosis among the old members. He quoted the statistics of the slaughter-houses of Leipsic. In 1885 the percentage of tuberculous cattle was 11; ten years later it had risen to 33⅓, and is still increasing. The tuberculin test can be relied on in the diagnosis of bovine tubercu losis. The general conclusion in Germany is that 50 per cent of all cattle are affected with the disease. The statistics of Massachusetts are equally unsatisfactory; in some of the herds imported into that State, all have been found to be affected. As to the susceptibility of human beings to bovine tuberculosis, he says the evidence is by no means satisfactory. Cattle inoculated with human tuberculosis have given localized results, in the main transient. The mortality from tuberculosis in childhood is now increasing, and it is the general opinion that the infection is from milk. Canadian cattle are quite free from this disease; in ninety thousand inspected cattle in Montreal in 1894, only eighty were rejected, and only two of these were suffering from tuberculosis. In two thousand post-mortem examinations at Montreal, only fourteen cases of tuberculosis were found.

The Clinical Significance of Variations in the Amount of Urinary Solids.—

J. H. Salisbury, in the *Chicago Clinic* for August, 1899, says that the increase or diminution of the solids of the urine is only evidence of disease when we take into account the various factors which influence the condition in a normal state. Not only must the quantity but the quality of the food be considered. If a person takes little food, he will certainly be below normal as compared with a staudard average in relation to body weight, but this diminution is only evidence of lack of appetite and not of diminished metabolism or retained excreta. Upon a fixed diet we may determine from the amount of food taken whether the excretion of solids corresponds to the amount normally produced from a given amount of food. If the food is deficient, the albuminous tissues of the body are likely to be broken up, and the urea derived from these will increase the solids, so that the amount derived from the food cannot

be approximately estimated. What is said of the total solids also applies to the urea, which forms about one-half of the solid constituents.

Injuries to the Eyes from Electric Light Flash.—

W. H. Fox, in the *Journal of the American Medical Association* of October 7, 1899, says that the term ophthalmia photoelectrica has been applied to the effects of strong flashes or the prolonged action of a strong light upon the eye. Cases are found among the electric workers and spectators of electric welding who have neglected to properly protect the eyes. A history of a case is given in which the eyes were exposed to a bright flash caused by the short circuiting of a current of 500 voltage. The patient was only temporarily blinded, and feeling no ill effects at the time continued his work for the remainder of the day. During the evening he read the newspaper, and went to bed at the usual time. At 11.30 P.M. he was awakened by intense pain in the eyes and head. There was marked photophobia; the eyelids were only slightly swollen. There was intense hyperemia, and the pupils were contracted to the size of a pin-point. Vision, roughly tested, was normal. The subjective sensations were as though there were foreign bodies in the eyes. Under hot applications and the instillation of four-per-cent cocaine solution the patient was made more comfortable. The following morning there was still some hyperemia and photophobia, but the condition of the eyes had improved.

The Art of Percussion.—

William Ewart, in *Progressive Medicine* for September, 1899, says that it is not sufficiently realized that percussion is always an instrumental method even when the fingers only are used, and that like all other instrumental arts it cannot be brought to perfection without considerable observation and persevering practice. It is unavoidable that individual observers should differ in their efficiency as percussors and that some skepticism should be entertained as to claimed results which some are unable to obtain for themselves. The plexímeter tends to equalize these differences between observers by substituting an instrument of unvarying physical properties. Less training is requisite for the use of the plexímeter than the finger, and conclusive results are obtained with it much more rapidly in the clinical examination of the chest. The chief objections to the use of this instrument come from those who have never given it a fair trial. He entertains a high opinion of finger percus-

sion, but finds it a difficult and laborious method to apply and a longer art to learn. Upon this question opinions will continue to differ.

The Early Diagnosis of Myxedema.—

C. W. Chapman, in *The Lancet* of September 30, 1899, calls attention to the early diagnosis of myxedema. The disease is rarely detected in its incipiency, it being frequently mistaken for other conditions. He especially directs attention to the condition of the eyelids and the "sloppiness" of the conjunctivæ, which is commonly known as "Bright's eye." In myxedema the same condition is found, but it is due to the presence of mucin. When this condition of the conjunctiva is noted he invariably examines the urine, and if no renal changes are present he is on the lookout for myxedema. In this way he has not infrequently made an early correct diagnosis.

SURGERY.

Acute General Peritonitis Treated by Continuous Irrigation with Normal Salt Solution.—

Earnest La Place, in the *Philadelphia Medical Journal* of October 14, 1899, reports the case of a woman admitted to the St. Agnes Hospital, Philadelphia, September 24, 1899. There were violent pains over the abdomen which had lasted for twenty-four hours. Profuse diarrhea began the day before admission. There was distention and tenderness over the whole abdomen, great pain, and constipation. For twenty-four hours vomiting was continuous, the pulse was 100, and temperature 100.4°. A diagnosis of acute peritonitis was made, which was thought to have an appendicular origin, as the patient had had several previous attacks, but none so violent as the one under consideration. On opening the peritoneum about eight ounces of thick, foul pus escaped. The colon, adherent to coils of intestines, was red and inflamed. The intestines were inflamed and covered in many places with fibrinous exudate. While the intestines were outside of the peritoneal cavity, a stream of warm normal salt solution was kept flowing over them. The portion of gangrenous omentum was dissected, as was the appendix. The operation lasted forty-five minutes. Prognosis was grave, and the writer states that he had never seen a case of this severity recover. The glass nozzle of an irrigator was introduced into the Douglas cul-de-sac; the tube was fixed to the abdominal wall by

means of a suture at the lower extremity of the incision. Three inches above this a glass drainage-tube was inserted. The remainder of the incision was closed above the second tube. A gauze dressing was loosely laid over the wound and secured by a piece of plaster. Irrigation was continued for a period of seventy-two hours, at the rate of ten pints every fifteen minutes, making a total flow of three hundred and sixty gallons through the peritoneal cavity. The temperature after operation and during the irrigation did not go above 100°, and the patient made an uneventful convalescence.

The author says the case demonstrates that the peritoneal cavity will stand with perfect safety a continuous irrigation with normal salt solution, and that in one case at least virulent and exceedingly rapid infection effectually ceased under this treatment. The irrigation caused no discomfort, as the flow of warm water was sufficiently copious to prevent chilling. The method has not, to his knowledge, been used before. It was of benefit in an apparently hopeless case, and is in accord with established surgical principles, being only novel in its application to the peritoneum.

Operation in Sinus Thrombosis.—

A. R. Baker, in the *Cleveland Medical Gazette* for September, 1899, reports the case of a boy aged eleven who was received in the hospital giving history of pain in the ear. One week before admission there were chills, high temperature, and tenderness over the mastoid. The ordinary mastoid operation was performed and a large abscess was opened. The temperature immediately fell to subnormal, but on the following evening it rose to 102°. During the subsequent two weeks the temperature pursued a varying course, ranging from normal to 105°. On five occasions during the two weeks it passed 104°. Except during the chill and the succeeding high temperature, the boy was bright and cheerful. The optic disks, extra-ocular muscles, pupils, and all reflexes were normal. There was no swelling or tenderness along the course of the jugular vein. From the absence of cerebral symptoms and the character of the temperature chart he was enabled to make a diagnosis of sinus thrombosis and determined upon radical operation.

Fourteen days after the first operation the sigmoid sinus was exposed for a distance of one and a half inches. There was absence of pulsation and no hemorrhage. It was then curetted upward until a free flow of blood was obtained. A tampon of iodoform gauze was held against the upper portion of the field of operation to control hemorrhage, and the lower portion of the sinus curetted.

Before free hemorrhage was obtained it was necessary to pass the curette well down into the jugular vein.

The gross appearance of the thrombus was like granulation tissue, but it was not microscopically examined; the quantity was considerable, amounting to two or three drachms. After the operation there was no rise of temperature and no bad symptoms of any kind. There was no hemorrhage and no suppuration, the boy making a rapid recovery. A slight purulent discharge continued from the ear for some weeks, but at the time the report was made this had ceased.

It is claimed that these cases are by no means infrequent, and that the diagnosis is usually made post mortem. The writer thinks there is no good reason why they should not be recognized and many lives saved by timely operation.

Hammer-toe.—

Charles MacLaurin, in the *Australasian Medical Gazette* of September 30, 1899, says that this is one of the trivial ailments that frequently cause a great deal of suffering. The toe most frequently attacked is the second, and it is usually bilateral. It commonly begins in childhood, but rarely becomes marked before puberty, when attention is called to it by the painful corn which forms upon the dorsum of the toe. Hammer-toe tends to progress slowly but surely, in spite of all mild remedial measures. At first there is a simple flexion of the proximal phalanx, but in time certain alterations of the bone occur. The epiphysial cartilage at the base of the second phalanx does not ossify until the twentieth year. There is unequal pressure upon this epiphysis, and growing in the line of least resistance it forms a kind of spur which projects beneath the first phalanx, which renders the condition permanent. The toe cannot be returned to a normal position, even under anesthesia, without fracturing the obstructing portions of bone.

The causes of hammer-toe are uncertain, they having been attributed to ill-fitting boots, contractions of the flexor tendons or weakening of the extensors, contraction of the digital prolongations of the plantar fascia, and wasting of the interossei. It is believed that the condition is not dependent upon the same cause.

Orthopedic apparatus, such as iron soles, pads, and splints, are quite useless, as the patients are usually seen too late. Division of the plantar fascia or flexor tendons only adds the cicatrizing of the divided structures to the original difficulty. Amputation is the ordinary treatment, but excision of the flexed bone is the best means of

dealing with the disorder, if the patient can afford the time and trouble. It leads, if carefully performed, to a nearly normal toe without tendency to recurrence.

A Case of Left-sided Appendicitis.—

W. E. Ground reports in the *St. Paul Medical Journal* for October, 1899, a peculiar case of appendiculiar disease with complete strangulation, in which the appendix was found upon the left side. The writer has examined the literature extensively, but has found no similar case. The patient, a woman 20 years of age, had always had good health, with the exception of indigestion and constipation. She was suddenly taken with pain in the abdomen, nausea, and vomiting. The pain was referred to the umbilicus, but tenderness was most marked two inches below the umbilicus and one inch to the left of the median line. Over this the abdominal muscles were decidedly rigid. Soon the abdomen became tympanitic, the nausea and vomiting increased, and there were no movements of the bowels. Later the vomiting became stercoraceous, and immediate operation was decided upon. Incision was located in the median line. The intestines were found in paralytic distention, and dark blue in color from venous stasis. The finger, passed down to the pelvic brim to the left, felt a tumor consisting of adherent omentum and intestinal coils. Separating the adhesions brought to light a pocket of thick, foul-smelling pus. Within the cavity a fecal concretion was found, and a large gangrenous appendix five inches long, which was removed. The cæcum was lying well to the center of the abdominal cavity and was of unusual form, being of the conical or fetal type, which gradually merged into the appendix by a funnel-shaped passage. The structural integrity of the bowel was doubtful. An opening was made, and a portion of it was stitched to the abdominal wall. The patient continued to improve until the eighth day, when there was a recurrence of the vomiting, abdominal pain, and subnormal temperature. This was found to be due to an artificial opening in the ileum, which had set up a general septic peritonitis.

Accessory Thyroid Gland at the Base of the Tongue.—

Arthur W. Watson, in the *New York Medical Journal* of October 21, 1899, describes the case of a woman 50 years of age who had had a lump in her throat for eight or ten years. It had given little trouble until of late, when it began to enlarge. The patient was weak and emaciated. Inspection showed a rounded tumor rising

behind the arch of the tongue. With the laryngeal mirror it was seen to spring from the space between the tongue and the epiglottis, the latter structure being displaced backward behind the tumor. It was smooth and firm, and was about an inch and a half long, an inch wide, and an inch thick. The top of the tumor was ulcerated. On attempting to remove the tumor only a portion was taken away, which healed the ulcerated surface and so contracted the growth that further operation was unnecessary. The true nature of the growth was not determined until a second case presented itself, when the identity of the two cases was established.

The second case was a colored girl aged 16, who had complained of a lump in her throat for five years. Examination showed a tumor identical in appearance and of nearly the same size as in the first case. It also was situated between the epiglottis and the base of the tongue. The growth was removed by the electric cautery snare. Upon microscopic examination the growth presented a meshwork of acini filled with colloid material containing many vacuoles. Lining these cavities was a single layer of epithelial cells whose nuclei stained deeply. The pathogenic diagnosis was cystic thyroid tissue undergoing colloid degeneration. Very few cases of this kind have been reported in the literature, and in the standard works on diseases of the nose and throat this kind of tumor is not mentioned. Tumors in this position are developed from the persistent upper part of the thyroglossal duct which opens at the base of the tongue. This duct is obliterated at the eighth week of fetal life, but may persist.

Maxims to be Followed in Asepsis.—

Carl Beck, in the *Medical Record* of October 7, 1899, gives the following directions regarding surgical aseptic technique:

The atmosphere being innocuous, all inorganic material being made aseptic by boiling, the skin surface being asepticized, and the skin glands which contain bacteria being *hors de combat*, it becomes evident that the only possible source of infection remaining would be the rough manipulations on the part of the surgeon or his assistants. Aseptic gloves should be worn by the operating surgeon during the skin incision. The assistant who passes the instruments and the one who attends to the wound itself should wear gloves throughout the whole operation. After incision the wound margins of the skin are covered with sterile napkins, which are fastened to the wound surface underneath the skin margins with miniature forceps, so that the skin wound is not touched at all during the

subsequent manipulations. The knife used for the skin incision must not be used for further incisions. The operation should be performed as rapidly as possible. For uniting the skin, the subcutaneous method should be preferred. Forcible manipulations, especially blunt operating, should be avoided. The surgeons and assistants wear sterilized suits or gowns. Their heads must be covered with sterilized caps, because in bending over the field of operation it often happens that the head of the surgeon and the head of his assistant come in contact; in this way infectious material may get into the wound. Long beards are entirely unsurgical. If a surgeon should suffer from rhinitis, tonsillitis, etc., he should use minute local precautions, or better, omit operating until recovery. It is self-understood that a surgeon should regard it as a crime to operate when suffering from even a slight furuncle.

Operative Treatment of Osteomyelitis.—

H. W. Cushing, in the *Annals of Surgery*, describes a case in which the entire shaft of the tibia was removed for osteomyelitis. In all these cases early operation should be performed, as it is imperative that the patient's life should be saved, and the effect of operation is immediate relief from pain. The medullary cavity is opened, and pressure is at once relieved with a corresponding limitation of infection. So far as the bone is destroyed it should be removed. The most favorable time for its removal is when the periosteum and granulation tissue is in its most active stage, but before the process of calcification has shut the sequestrum within a shell of bone. This point is easily determined by examining sections of the periosteum, and is shown by the presence of numerous fibroblasts, osteoblasts, and small trabeculæ, in which lime salts are beginning to be deposited. Clinically it can be recognized by the slight crackling sensation as the periosteum is incised. In this stage the periosteum resembles granulation tissue in color, and is commonly reached by the seventh or eighth week of the disease. In removing the necrotic bone the periosteum should be opened in the long axis of the leg and the dead bone shelled out. The periosteal sheath is then closed by suture. If care is taken the whole operation may be aseptic, and in the center of the leg we have a bone-producing membrane which will give rigid support to the leg in from eighteen to twenty-four days. If the operation is performed too early the growing periosteum is apparently injured and bony growth interfered with; if too late a rigid bony involucrum makes the removal of the sequestrum difficult, and forms a cavity which is hard to close.

Drainage in Surgery of the Appendix.—

W. S. MacLaren, in the *Medical Record* of October 28, 1899, says in reference to drainage after operations on the appendix that cases may be divided into two classes. The first comprises those in which the abscess is localized, while the second includes the more serious cases in which pus is found in the abdominal cavity. In the first drainage is proper, but may sometimes be unnecessary. In the second group the conditions are different, and they should not be treated like simple abscesses. His reasons for this view are that drainage is an impossibility, and it takes the place of more rational procedures. If glass tubes or gauze strips are employed, they are completely shut off by adhesions at the end of twelve hours. In such cases the drain can be of no use, and it only irritates a surface already inflamed. In these cases he recommends the flooding of the abdomen with saline solution, which increases the resisting power of the peritoneum. This flooding of the abdomen with saline solution dilutes the poisons which are generated during the few hours following the operation and favors the destruction of the infection by the uninjured epithelium.

[In another abstract we call attention to a method of treating these cases by continuous irrigation. One patient who was practically moribund, with a large amount of pus in the peritoneal cavity, entirely recovered after irrigation with large quantities of saline solution extending over a number of days. There is every reason why continuous irrigation should be useful in this form of peritonitis, and if it is a good thing to leave the abdomen full of saline solution there can be no objection to replacing it from time to time as it is absorbed.]

Removal of Tumor of Suprarenal Capsule.—

Mayo Robson reports in the *Therapeutic Gazette* of October 15, 1899, two cases in which a tumor of the suprarenal capsule was successfully removed. One was that of a man 41 years of age, operated in 1891, who died of recurrence of sarcoma and exhaustion in a few months. The second case was that of a woman of 62, who was operated in 1897, and is still living and well. The tumor belonged to the struma lipomatosa suprarenalis. In the first case the tumor was so intimately associated with the kidney that that organ had to be removed at the same time, but in the second case only a wedge-shaped piece of the top of the kidney was taken away. A table of eight cases is given, of which four recovered and four died. These are believed by the writer to represent all of the

operations that have been performed upon the suprarenal gland. The following symptoms are said to attend some of these cases: Pain in the shoulder-tip was noted in three of the cases, and is believed to be due to involvement of the small branches of the phrenic nerve; pain radiating from the tumor across the abdomen and back, not along the genitocrural nerve; marked loss of flesh with nervous depression and loss of strength; digestive disturbances with flatulence and vomiting. The tumor is felt beneath the costal margin and is at first movable, but soon becomes fixed. It can also be felt in the costovertebral angle posteriorly, and can be pushed forward into the hollow of the palpating hand in front of the abdomen.

Paralysis Following General Anesthesia.—

W. M. Leszynsky says that there is still a misapprehension in regard to the cause of paralysis following anesthesia. In the vast majority of cases paralysis is due to a lesion of the nerve trunk resulting from direct or indirect pressure. The patient may have increased susceptibility, as has been noted in alcoholics, so that less pressure is sufficient to cause a paralysis than in normal individuals. Paralysis produced by pressure upon a nerve trunk is preventable in every instance. As a rule the upper extremities are involved. Prolonged elevation and extension of the arms, by which pressure of the head of the humerus is made upon the brachial plexus, is the most frequent cause. The head turned one side and in extension is another cause, as is the placing of the arm under the head. The same result is reached by allowing the head or arm to hang over the table, and it must not be forgotten that if the elbow of the operator is allowed to rest below the clavicle it will cause sufficient pressure to abolish the function of some nerve trunks.

Enucleation of the Eye for the Prevention of Sympathetic Ophthalmia.—

B. F. Church, in the *Southern California Practitioner* for October, 1899, says that the causes which produce what is understood as sympathetic ophthalmia are obscure, but they may be defined as any local condition that produces violent iridocyclitis. Penetrating wounds which involve the ciliary body, with or without prolapse of the iris or ciliary body, or those in which foreign bodies remain in the eyeball, are conditions especially to be feared. Eyes blinded from suppurative processes show little tendency toward the development of this complication. Sympathetic inflammation, as a rule,

resists all treatment, the only hope being prompt enucleation of the inflamed eye, this procedure not always being successful in stopping the inflammation in the sound eye. The time of greatest danger is from three weeks to four months after an injury to the eye.

The Prevention of Sickness After Anesthetics.—

J. Blumfeld (*Lancet*, September, 1899) says that after-sickness of anesthesia is dependent largely upon idiosyncrasy. It is to be avoided by using as little of the anesthetic as is consistent with perfect anesthesia. Wash out the stomach when much mucus has been swallowed. In long operations substitute chloroform for ether after three-quarters of an hour. Move the patient as little as possible after operation, after placing him on the right side with head slightly elevated. Give nothing but hot liquid food for at least eight hours after operation. Do not alter the temperature of the room for some hours.

THERAPEUTICS.

Digitalis in the Treatment of Heart Disease.—

W. H. Washburn, in *Merck's Archives* for October, 1899, says that much of the advance in therapeutic art in late years has been due to an investigation of older remedies and a more accurate understanding of their beneficial effects and contraindications. The action of digitalis is upon muscular fiber, causing it to relax more slowly and to contract more quickly and perfectly. Its effects are not alone limited to the heart, but extend to the muscular system in general. Digitalis increases blood-pressure and converts the intermittent circulation in the capillaries into a steady flow. The increased blood-pressure lessens the rapidity of the heart's action, as well as does the action of the drug upon the vagus. The whole amount of blood in the arterial system is increased, and there is a corresponding lessening of the amount in the veins. This stimulates the absorption of serous exudates. The myocardium, like other tissues of the body, receives an increased blood-supply, and consequently its nutrition improves, thus favoring compensating hypertrophy. Digitalis is not contraindicated in aortic regurgitation with full pulse. The administration of digitalis is much hampered by fear of its cumulative effects. This is a real danger, as it is a drug that is absorbed slowly, and elimination is by no means rapid. In consequence we may have a chronic or acute

intoxication if the doses are small and administered at short intervals. Chronic poisoning by digitalis results in contracted arterioles and an increase of resistance in the peripheral circulation. The coronary arteries, in common with other arterial trunks, share in this condition, and consequently, as a result of too free administration of the drug, the nutrition of the myocardium is lessened, with a consequent aggravation of the heart failure. The dose of digitalis that will prove tonic to the heart is a moderate one; this dose must only be repeated after a sufficient interval. If the dose be excessive and the interval between the doses too short, unfavorable results may follow. A fair dose of general application is the use of one grain of the powdered leaves, or its equivalent in any of the official preparations, administered once in twelve hours. This is a dose that can be continued for months or years without saturating the system. Such doses may not produce the immediate results which are often desired by the friends of patients, but under its administration a feeble, almost imperceptible, pulse gradually improves, with a corresponding amelioration of the general symptoms. If larger doses are employed symptoms of saturation should be looked for, which is shown by a slowing of the pulse-rate, lessened diuresis, and more rarely diarrhea.

Antitoxic Serum in Tuberculosis.—

A. M. Holmes, in the *Journal of the American Medical Association* of October 7, 1899, supplements a recent report by an additional fifty cases treated within the last twenty-one months. The cases were divided into two classes—those in the incipient stage which had not advanced to the stage in which expectoration showed bacilli, and another included those in which the bacilli were present in the sputum. There were nineteen cases of the former, thirteen of which reacted to the tuberculin test. Without a single exception these cases made a rapid improvement under the serum. But one of the nineteen relapsed after improvement, and he improved when the treatment was resumed. There were thirty-one cases in the second group. Of these, four were cured, five made distinct improvement, but the serum was discontinued too soon. Of twenty advanced cases, four improved, seven improved slightly but subsequently became worse, three made no improvement, and six died. In well advanced cases the serum invariably causes an elevation of temperature, which occurs from three to six hours after its administration. The areas in which the injection of the serum is made become more or less infiltrated, but are not tender or painful. Long

and persistent use of the serum produces a depressing effect, which is relieved by short intervals of rest. There is more or less glandular reaction. In some cases this appears within three or four days, but in the majority it does not show itself for a week or ten days. The writer believes that the tuberculin test is a valuable means of diagnosis, and it is safe. With its aid a diagnosis can be made before the bacilli are found in the sputum. During the course of the treatment it serves as a reliable means of estimating the degree of convalescence. In doubtful or obscure cases he has found the blood-count a greater aid to diagnosis than the study of the sputum. In cases experiencing good effects of the serum an increase of the lymphocytes in the blood is noted. In rapidly progressing cases their number is decreased, and he emphasizes the necessity of an early diagnosis and prompt treatment. If the latter is delayed until bacilli are found in the sputum, much valuable time is lost.

The Value of the Tuberculin Test in Tuberculosis.—

E. O. Otis, in the *Journal of the American Medical Association* of October 28, 1899, says that the tuberculin test has strong opponents as well as ardent advocates. Those who oppose its use take the ground that it is dangerous, that it may aggravate existing disease, or may lead to a general infection; that it is unreliable and gives reactions in other diseases, notably syphilis; and that it fails to react in undoubted cases of tuberculosis. The writer thinks it is valuable, though by no means infallible, in detecting tuberculosis in doubtful cases. The *x*-ray examination he recognizes as an accurate and delicate means of diagnosis, but owing to the complicated apparatus necessary its use is limited. If a diagnosis of tuberculosis is delayed until signs of the disease can be elicited by percussion and auscultation, or by the presence of tubercle bacilli in the sputum, then the disease has advanced several stages beyond the primary one. The tuberculin test has been given a bad name by the enormous doses which were employed soon after its discovery; when used in not over ten-milligramme doses there are no permanent injurious results. Occasionally a case of tuberculosis will fail to give a reaction. Syphilis reacts to the test in an undetermined proportion of cases; a few non-tuberculous persons may give a reaction. In using the test it is always well to employ some preparation of a standard strength. In giving the injections aseptic precautions should be employed, and they should be made deep into the muscles of the back or leg. The temperature should be taken, beginning twenty-four hours before the injection.

Allow several days to pass before repeating the test. In early cases depend on the early reaction; in late cases, if the general reaction fails, carefully look for the local.

The Hydrochloric Acid Treatment of Sciatica.—

J. S. Purdy, in the *Australasian Medical Gazette* of August 21, 1899, credits the origin of this treatment to an accident. According to the *Semaine Médicale*, "a man who had suffered for many years from sciatica was treated in an Algerian hospital with hypodermic injections of salt water without benefit. After he left he bethought him that perhaps the salt was not strong enough, and that a stronger preparation of salt might be more successful. He therefore procured some spirit of salt (hydrochloric acid) and painted it on the skin, getting rid of his long-standing trouble in a few days." The procedure recommended by Gennatas is to take half an ounce of strong hydrochloric acid and paint it over the painful part of the nerve three or four times. The leg is then enveloped in a cotton-wool dressing. The skin soon becomes reddened and hot. A second application may be made in forty-eight hours, after which four days must elapse before applying the remedy a third time.

The first case reported by Purdy was that of an agricultural laborer, who complained of burning and shooting pains extending from the sciatic notch to the heel. The tendo Achillis reflex was absent. He had been treated with salicylates, hot baths, and rest in bed without benefit. Pure hydrochloric acid was painted over the painful areas, and the resulting burn was dressed with zinc ointment and bandaged. Relief followed the first application. Another case was that of a miner who had been working in the wet. In this case three applications resulted in recovery. In four other cases the treatment gave satisfactory results. Marked benefit was obtained by the application of the acid in a case of intercostal neuralgia.

The Treatment of Leprosy by Calmette's Antivenene.—

R. S. Woodson reports in the *Philadelphia Medical Journal* of October 28, 1899, a case of a woman born in Germany, aged 36 years, who became leprous seven years ago. The source of the infection was uncertain, but it probably took place in Mexico. The disease was unrecognized until within the past six months. The diagnosis was made clinically and confirmed microscopically. She was treated with Calmette's antivenene serum, which was sent direct from the Pasteur Institute, New York. The first injections consisted of two cubic centimeters, which was gradually increased

to forty cubic centimeters. The reaction after each injection was marked, and the daily temperature increased with the dose. During the first few weeks of the treatment the disease assumed an acute form, as was shown by the fever and papillary reaction which developed in a few days, and a general neuritis of all extremities. While the serum was being used she received at the same time large doses of hoang-nan. The hygienic treatment of the patient was good, and far superior to the manner in which she had been living before she came under observation. It is difficult to say just which portion of the improvement is to be attributed to the change in the surroundings and what to the treatment. All that can be said is that at the present time there are no ulcerations on any part of the body, nor are there any tubercles. The nasal secretion is greatly diminished, and the anesthesia of the extremities is diminished to a marked degree. The general appearance of the patient is much improved.

Aspirin.—

Lorand Lengyel, in *Die Therapeutische Monatshefte* for August, 1899, states that aspirin is a compound of methyl and salicylic acid. It is soluble in water in the proportion of one per cent, and is easily dissolved in alcohol and ether. In bulk it has a slightly acidulous taste. It is decomposed only by alkaline solutions, hence it is believed to pass the stomach unchanged, but in the intestines is broken up into salicylic and acetic acids. The disagreeable effects of salicylate of sodium are believed to be due to the elimination of salicylic acid in the stomach, the toxic effects of the drug being well known, and if administered in sufficient doses it is almost certain to cause disturbance of digestion. Gastric oppression and tinnitus are not observed when aspirin is given. It is best prescribed in fifteen-grain doses taken dry upon the tongue and washed down with some water, or else administered in wafers. It is quite as efficient as salicylic acid or the salicylate of sodium, and has none of the disagreeable effects of these drugs.

Peripheral Neuritis Following the Use of Sulphonal.—

John Sutcliffe, in the *Journal of Mental Science* for October, 1899, describes a case of acute melancholia that had been subject to recurring attacks of great excitement lasting about a month. Forty-grain doses of sulphonal had been given on many previous occasions without effect. From the 3d to the 9th of January, eighty grains of sulphonal was given each day, which quieted the patient. On the

10th he was in a drowsy condition, from which he could be easily roused. He then presented all the symptoms of neuritis. He complained of pain and pricking in the legs, which were painful to touch. He was unable to walk, he could not extend or supinate his hand, and the toes were pointed. The pupils acted slowly, and the knee-jerks were absent. On January 20 wasting of some of the muscles was observed, particularly those of the calves. At the time of the report the paresis had diminished, but the legs were still weak.

In the discussion Conolly Norman stated that he thought a forty-grain dose of sulphonal was too much. Trional is a much safer drug. It is quickly absorbed and produces sleep at once, or not at all. Fletcher Beach stated that he had discarded sulphonal in favor of trional, as the latter is less depressing, and the sleep secured is more refreshing. A. R. Urquhart said he had used sulphonal for years, and had only once seen bad effect.

Drinking Milk.—

An editorial in the *American Journal of Health* for September, 1899, says that the reason milk disagrees with so many people is because it is taken hastily, or in large quantities. Milk contains all the elements necessary for the maintaining of the nutrition of the body, and many, if not most, people would be better off physically if milk and entire wheat bread formed their ordinary diet. Especially is this true of delicate persons whose power of digestion has become enfeebled. Persons suffering from nervous prostration are not able to digest meat, but if they can be persuaded to take milk, sipping it slowly, a teaspoonful at a time, it may be found to agree with them perfectly. If the milk is swallowed in large quantities it coagulates as soon as it comes in contact with the juice of the stomach, forming a large curd, through which the gastric juices cannot easily penetrate and act with solvent power; hence, only the outer portion of the curd is worked upon. If the milk is taken in small quantities, the curds which are formed are in small masses, and are easily digested. Corn-starch or arrowroot is, as a rule, not to be added to milk for those who have slow or difficult digestion.

The Treatment of Tapeworm.—

G. R. Patton, in the *Northwestern Lancet* of October 15, 1899, says that emulsion of pumpkin seed is the most useful remedy in removing tenia, providing all the details of the treatment are carried out. He mentions the case of a soldier during the Crimean war who

had acquired a tapeworm at the siege of Sebastopol. This had been treated unsuccessfully at Scutari, London, Glasgow, and New York. He gave him, seriatim, pomegranate root, kousso, male-fern, and kamala without dislodging the entozoon. Success was finally reached by the use of pumpkin seed.

The procedure recommended is to begin the treatment by a brisk cathartic, which is followed by a reduced diet extending over four days, during which time two daily evacuations of the bowels are secured. The emulsion is prepared from a quart of pumpkin seeds, which after decortication should measure a pint. These are rubbed up in water until a smooth homogeneous emulsion is obtained. The emulsion when prepared should measure three pints, and it must be kept on ice from the time it is prepared until the last dose is taken. After the preliminary fast the patient is kept in bed, and the emulsion is given in doses of eight ounces until the whole quantity has been taken. The purpose of keeping the patient in bed is to prevent the large quantity of not overpleasant medicine from being rejected. The writer especially enjoins attention to detail if success is to be reached by this treatment.

Heroin for the Relief of Pain and Cough.—

Max Einhorn, in the *Philadelphia Medical Journal* of October 28, 1899, says that in three out of four cases of pulmonary tuberculosis the cough was markedly relieved by the administration of heroin, while in one case, after acting beneficially for a time, the drug lost its effect in fourteen days. In five out of seven cases of asthma it diminished the dyspnea and alleviated the cough. In two of the cases iodide of potassium was given in connection with the heroin. In two cases of asthma no improvement was noted. In two cases of chronic bronchitis one was improved, and in the other there was no favorable influence. In three cases of dyspnea associated with disease of the heart, improvement was noted in two cases, while a third was unchanged. In one case in which there was pain in the stomach and chronic bronchitis, the remedy acted well, but produced constipation. In two cases of gastralgia decided amelioration took place. In one case of tabes dorsalis, in which lightning pains were present, great relief was obtained from the administration of the drug. In heroin we have a valuable therapeutic agent which allays cough and eases respiration. It possesses general analgesic properties which make it beneficial in most painful affections. With the exception of slight dizziness and occasional dryness of the throat, he has not seen unpleasant results from the prolonged administration of the drug.

Analgesic Properties of Dionin.—

E. Bloch gives in the *Therapeutische Monatshefte*, No. 8, p. 418, the results obtained in the treatment of very painful affections by this drug. Compared with morphine and codeine, it is superior to both as an analgesic. It is said to be devoid of toxic properties, and he has never observed nausea, vomiting, paleness, arrhythmia, constipation, or other phenomena, so frequent after the employment of morphine. In rheumatism and influenza he gives it in the form of suppositories containing 0.03 centigramme. The same dose has proved to be of service in sciatica and intercostal neuralgia. The drug may be administered subcutaneously. He has used it to prevent pain both by the stomach, subcutaneously, and in the form of suppositories, where it has been necessary to massage inflamed articulations, reduce fractures, and in various gynecological procedures involving some pain.

Dionin is a hydrochlorate of the mono-ethyl-ester of morphine. It is a fine, white, crystalline powder, soluble in water, and is well adapted for subcutaneous administration. Dionin exhibits the narcotic properties of morphine without attaining its intensity. It has been recommended in the treatment of opium habituation, sciatica, and neuralgia. Addiction is not acquired by its prolonged use.

Arsenite of Copper in Typhoid Fever.—

Louis Kolipinski, in the *Maryland Medical Journal* of October 21, 1899, calls attention to the beneficial application of arsenite of copper in meeting some indications in typhoid fever. It is to be given in the second, third, and fourth week of the disease after the symptoms have subsided, but the temperature remains elevated and shows little or no tendency to decline. In those cases in which there is sudden elevation of temperature, or in those in which it is subnormal, with a rise to 99° or 100° in the evening, or in those in which it is markedly intermittent, the febrile oscillations will be arrested completely in from one to four days and convalescence follow. It is given in $\frac{1}{1200}$ to $\frac{1}{2400}$ of a grain in a teaspoonful of water, every half-hour. The arsenite given in this extremely minute dose, often repeated, is said to be much more efficient than when given in a larger dose.

Diphtheria Treated by Dry Antitoxin.—

Louis Fircher, in *Pediatrics*, reports five cases of diphtheria treated by dry antitoxin. All of these cases, two of which were very severe, recovered promptly under the injections. None of the

children complained of joint pains, nor was the injection followed by a rash. Dry antitoxin contains no carbolic acid or other preservatives, to which some writers attribute the systemic disturbances and local changes which sometimes follow the injections. Dry antitoxin is described as a golden-yellow crystalline substance, readily soluble in sterilized water. It should be dissolved by adding from one to four cubic centimeters of cold sterilized water in the original container. The solid serum dissolves slowly, and care should be exercised not to contaminate the solution, as it contains no antiseptic.

Digitoxin as a Substitute for Digitalis.—

J. P. Sawyer, in the *Journal of the American Medical Association* of October 28, 1899, says that the so-called active principles of digitalis have been looked upon by the profession with distrust because of their toxic properties. Digitoxin is the most effective of all the substances contained in digitalis leaves, and it is indicated in all cases where digitalis should be employed. The writer states that he has found it to succeed in some cases where digitalis has failed. The earlier users of digitoxin found that it irritated the stomach, so that it was largely given by the rectum or hypodermically. This irritation was due to the employment of too large a dose. In small quantities it causes no irritation of the digestive tract. Digitoxin acts favorably as a diuretic.

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS.

The Relative Indications of Symphyseotomy and Cæsarian Section.—

Paul Bar, in *L'Obstetrique* (*Medical Review*, October, 1899), in an exhaustive paper based on his observations of twenty-two cases endeavors to ascertain exactly the present position of symphyseotomy, and compares its indications with those for Cæsarian section. In all his cases the pelvic contraction was of rachitic origin, and this is the only indication of which he takes any account. The technique is considered under four headings:

1. The management of the labor prior to the section of the symphysis. During this period the child is subject to serious risks, such as prolapse of the funis or the slowness of the labor, which is most marked after premature rupture of the membranes. Amongst primiparæ the risks to the child are greater during this period than amongst multiparæ. The fetal mortality during this period appears to be 10 to 12 per cent. Accordingly, it is desirable to shorten this

period, which can be done by artificial dilatation of the os. The methods of artificially dilating the os are: (1) manual dilatation, which has given very good results in multiparæ and in those primiparæ who possess a very dilatable cervix; (2) Tarnier's dilators, which are very disappointing and often completely fail; and (3) the employment of dilating bags. These often produce complete dilatation and so hasten the labor, but not always. Sometimes, after expulsion of the largest bags from the cervix, the situation cannot in any way be compared to that produced by natural dilatation. Difficulties may be encountered by the contraction of Bandi's ring, or by insufficient dilatation of the walls of the cervical canal or external os. In these cases attempts at extraction immediately after the expulsion of the bags meet with serious difficulties. On the other hand, women with generally contracted pelves usually have narrow vaginæ, which offer great resistance to dilatation. In such cases rapid extraction of the child is apt to produce extensive ruptures of the vaginal walls, and the risks to the child are enormously increased, owing to the resistance of the soft parts. Previous dilatation of the vagina and vulvar orifice can lessen, but cannot completely obviate, this difficulty.

Should attempts at extraction be made before proceeding to the section of the symphysis, this can only be done with the forceps. The writer has recourse to such attempts only in cases where the pelvis is relatively slightly contracted, and the prospects of success seem great. He has come more and more to the conviction that these attempts at extraction should be made in moderation, prolonged attempts merely detracting from the chances of successful delivery by symphyseotomy.

2. The section of the symphysis. The technique established by Morisani, Faraboeuf, and Pinard was followed. The writer never had the slightest difficulty in finding or dividing the symphysis, both of which have caused difficulties in the hands of certain operators. The separation of the bones by abduction of the thighs is easy. The complications which may arise are: (1) vaginal and vulvar lacerations; (2) distention and laceration of the vessels; (3) dislocation and laceration of the urethra; (4) hemorrhage, which is easily arrested by pressure; (5) diastasis of the sacroiliac articulation.

3. Extraction or expulsion of the child. The separation of the pelvic bones having increased the size of the pelvic cavity, the osseous obstacle disappears. The labor may now be left to terminate spontaneously, which is the practice of Zweifel, or extraction of the child may be practiced, according to Pinard. The writer

allowed labor to proceed spontaneously where expulsion of the child seemed easy and rapid. Thrice in his twenty-two cases delivery was spontaneous. Extraction may be performed either by forceps or version. Forceps and version were each employed nine times, while the prehensile lever was used in the remaining case. When the head is movable, the os well dilated, and the soft parts supple and dilatable, the writer prefers version; when the head is fixed, the os poorly dilated, and the vagina at all rigid, he prefers forceps. Any difficulty in extraction by version increases the risk to the child, whereas a check during the use of the forceps does not necessarily directly compromise the child's life. Whichever operation is chosen it must not be forgotten that insufficient dilatation of the vagina and vulva may prove an obstacle to the rapid extraction of the child after section of the symphysis.

4. Suture of the symphyseal wound. Either the fasciæ or the pubic bones may be sutured. The writer prefers the latter. Drainage may be employed where large infected communications with the wound exist.

Immediate Results.—In the twenty-two cases there was no death of either mother or child. Adding to these figures those published by Pinard, Zweifel, and Kustner, 149 symphyseotomies have been performed, with ten maternal deaths (6.7 per cent), and fourteen infantile deaths (9.39 per cent). Turning to the figures published by Morisani in 1894, we find 241 cases with a maternal mortality of 11.6 per cent, and an infantile mortality of 20 per cent, but these figures include cases operated upon in the preantiseptic era, before the modern perfection of the operative technique. The maternal mortality is due, in nearly every case, to infection.

Remote Results.—These include incomplete consolidation of the symphysis leading to difficulty in locomotion, a great tendency to prolapsus uteri, and to urinary disturbances such as vesical or urethral fistula, and incontinence of urine. The liability to all these troubles is increased where repeated symphyseotomies have been performed.

Relative Indications of Conservative Cæsarian Section and Symphyseotomy.—In such extreme cases of pelvic contraction that a child cannot be delivered through the natural passages, symphyseotomy is out of the question, and Cæsarian section becomes an operation not of choice, but of necessity. In less marked pelvic contraction, should the conservative Cæsarian section or symphyseotomy be performed, the former completely safeguards the interests of the child, while the latter does not. On the other hand, the

immediate dangers of the operation, such as shock, hemorrhage, etc., are greater in the case of Cæsarian section than in symphyseotomy. Again, Cæsarian section, when performed aseptically, causes less risk than symphyseotomy, since the dangers due to the extraction of the child are entirely avoided. The progress of asepsis readily explains the rapid diminution in the mortality and morbidity of the mother after Cæsarian section. The remote dangers of Cæsarian section are also less serious than those of symphyseotomy. Hence, if labor has not commenced and it is possible to operate aseptically, and the patient herself has no infective condition, such as influenza, vaginitis, etc., Cæsarian section should be chosen in preference to symphyseotomy. This will be the more indicated the narrower and more contracted the pelvis is, especially in primiparæ, in whom the risks of injury to the soft parts during extraction are greatly increased. If the labor is commenced, but is little advanced, and where on account of the condition of the soft parts extraction would appear to be difficult, Cæsarian section is also indicated. On the other hand, where the labor has been in progress for some time, especially if the membranes have been long ruptured, and where there appears to be no excessive rigidity of the soft parts, symphyseotomy is to be preferred. In any case, if during the labor the patient has been exposed to the slightest chances of infection, Cæsarian section is contraindicated, and the indications for symphyseotomy likewise become extremely restricted.

Constipation in Infants.—

H. N. McClanahan, in the *Journal of the American Medical Association* of October 14, 1899, contributes a paper on the treatment of this condition in infants under six months. His study is based upon twelve cases. In every case of constipation in infants the cause must be earnestly sought for, which is usually different in infants from what it is in children and adults. In his cases no signs of rickets were found. He divides these cases into two general groups—those in which the symptom is caused by quantity, quality, and method of feeding, and those which are due to anatomical conditions of the colon.

In the first class the question of diet is of the utmost importance, though no arbitrary rule can be given. Each case has its peculiarities, which must be studied, but as a general rule the percentage of fat should be increased and that of casein reduced. When the stools are light-colored and dry, the casein is to be decreased, and in some cases milk should be peptonized. Correc-

tion of the diet alone will not always cure, and drug treatment becomes necessary. His choice is resin of podophyllin given in alcohol in doses of from $\frac{1}{40}$ to $\frac{1}{24}$ of a grain. If the discharges contain mucus, phosphate of sodium is given in the form of a saturated solution, and a little orange juice added to make it more palatable. Muscular debility with tympanites indicates strychnine and nitric acid. In these cases massage of the abdomen and of the entire body is beneficial.

In the second class neither diet nor medicine is of much benefit. Cathartics are not only harmful, but dangerous. Digital examination of the rectum is useful as an aid to diagnosis and also as a method of treatment. By this means the entire pelvis can be explored and the sigmoid flexure reached. This stimulates peristaltic action of the bowels, and it is sometimes possible by gentle manipulations to straighten the folds of the lower portion of the colon. In three of the twelve cases he succeeded in getting a free movement of the bowels by this means. In this group of cases he has found injections given in the usual way to be of little benefit, as they do not distend the bowel. When injections are given he employs a lisle thread catheter passed through a cork. The latter is placed against the sphincter muscle, and as the fluid begins to flow the catheter is gently passed into the bowel. In this way the hydrostatic pressure inflates the bowel. Great care is requisite in the management of these patients, which must often extend over several months. One of his patients was under treatment over ten months before a natural movement of the bowels occurred.

Some Causes of Maternal Dystocia.—

R. E. Cutts, in the *Annals of Gynecology and Pediatry* for September, 1899, says that the physician is apt to look upon all labors as normal at least until they have begun and some complication has set in. Many conditions could be avoided if they were learned beforehand and proper measures taken. Our medical schools are especially neglectful in teaching obstetrics. There has been an immense advance in the clinical instruction in internal medicine, surgery, and the diseases of women, but there has been no additional attention paid to obstetrics, it seeming to have been swamped by gynecology.

The author discusses some of the causes of maternal dystocia in roomy pelves and normal children. The first and most important of these is obliquity of the plane of the superior strait. In these cases the propelling force strikes the plane of the superior strait at an oblique

angle, and the head is driven against the pubes. He has adopted a method of measuring this angle, having ascertained from specimens that a line joining the spine at the fourth lumbar vertebra and the superior margin of the pubes practically coincides with the superior plane of the pelvis. All that is necessary to ascertain the obliquity of the pelvis is to find the angle which this line makes with the long axis of the body. An instrument which he has constructed for the purpose of measuring this angle shows that it varies from forty-five to sixty-three degrees. The second cause is lordosis of the lumbar vertebra, more particularly a prominence of the last one. In case the lumbar curve is very pronounced, dystocia must certainly result.

The third group of causes deals with the condition of the pubes, the length of which and the subpubic ligament varies from one to three inches. With this latter condition dystocia occurs in the middle and lower part of the pelvic canal.

Diffuse Hypertrophy of the Breast.—

James Bell, in the *Montreal Medical Journal* for October, 1899, describes the case of a well developed, well nourished French Canadian girl, aged 17, who was admitted to the Royal Victoria Hospital for enormous hypertrophy of the breasts. The family history was negative. Nothing was abnormal with the internal organs excepting a slight trace of albumin in the urine. The breasts were painless and moderately pendulous. In palpating the sensation communicated to the hand was that of a partially filled sac of fluid containing freely movable, hard, fleshy masses. Just below the nipple of the left breast was a patch of ulceration as large as a half-dollar, the result of pressure gangrene. The enlargement came on rapidly, being first noticed in November, 1898, the deformity becoming very pronounced by March, 1899. The left breast was removed August 7 and weighed six and one-half pounds. The right was removed August 26 and weighed five pounds and thirteen ounces.

J. G. Adami examined sections from the hypertrophied masses. He found that there was an orderly hyperplasia of the fibrous tissue, namely, granuloma. The abundant connective tissue between the alveoli was too perfectly formed to allow the condition better spoken of as fibromatous; the term "cheloid" he thought described the condition.

F. E. Bunts reports a case of unilateral diffuse hypertrophy of the breast in the *Cleveland Medical Gazette* for September, 1899. The patient was 19 years of age, having a good appetite and diges-

tion and no disturbance of the internal organs. The enlargement was noticed in the fifteenth year; it came on slowly, and was painless. The enlargement was uniform, and the only discomfort caused was on account of its weight. Unfortunately this case is not accompanied with an account of the histological changes in the gland. The occurrence of unilateral hypertrophy is very rare.

A Cause and Treatment of Convulsions in Children.—

In the Section of Diseases of Children of the British Medical Association (*Pediatrics*, October, 1899), J. E. Coutts, A. M. Gossage, and Hugh Jones discussed this subject. It was stated that too much stress was laid upon the instability of the infantile nervous system. The immediate predisposing causes were inherited neurotic states and rickets. The idea that convulsions in a child are equivalent to the rigor of the adult are contrary to the facts; in cases of pneumonia, in which there is excessively high temperature, convulsions are rare. Again, in the exanthemata convulsions are more frequent during the course than at the outset of the trouble. Bromides are strongly recommended in the treatment. Convulsions must be regarded as symptomatic only, and of late years there has been an enormous decrease in the number of deaths which are reported as due to this condition. In 1878, 24,700 cases were reported in England, while in 1897, 18,384 were attributed to this cause. This marked decrease is ascribed to the improved treatment, better sanitation, and more correct diagnosis, by which cases are transferred from a purely symptomatic group to those having a more definite anatomical basis. Some influence must also be attributed to the tendency of late to place many cases under influenza. The most important cause of convulsions was attributed by Jones to bad feeding.

Ventrofixation.—

X. O. Worder, in the *Annals of Gynecology and Pediatry* for October, 1899, reports five cases of firm ventrofixation followed by delivery at term. In two cases dystocia followed this operation, done for complete prolapse of the uterus with invasion of the vagina. One case terminated spontaneously; the other required Cæsarian section. The former case had been operated upon by himself, the latter by another surgeon. In both cases a series of operations was done at one sitting, including curettage, amputation of cervix, anterior colporrhaphy, ventrofixation, and perineorrhaphy. In his own case very firm fixation of fundus and posterior

wall of uterus to abdominal wall was made, in order to be sure of relieving prolapse. In the other case infection is said to have been the cause of broad attachment and firm fixation.

The author excludes from discussion other procedures intended to hold the uterus in anterior position, and defines the limits of ventrofixation as follows: It is the operation of preference in cases of complete prolapse of the pelvic organs and in cases in which a very large and heavy uterus, due to chronic metritis, is habitually retroverted or retroflexed and causes pronounced symptoms. In these cases he thinks less rigid fixation is ineffective. The fixation should be between the anterior uterine wall, not the fundus or posterior wall, and lower angle of wound. He attributes the serious after-results to errors in technique rather than to the procedure itself.

Meningitis Due to the Typhoid Bacillus.—

A. H. Wentworth, before the American Pediatric Society (*Boston Medical and Surgical Journal*, Oct. 19, 1899), reported the case of a child four years of age who was first seen October 1, 1898. Prior to admission to the hospital the child had had fever, loss of appetite, and was drowsy, with occasional delirium. The urine contained a trace of albumin, and the blood gave 12,000 leucocytes to the cubic centimeter. The following night the child had two mild convulsions lasting about one minute. Spinal puncture was employed, but the fluid obtained gave no result upon bacteriological examination. The Widal test was negative, though the clinical symptoms were those of a moderately severe type of typhoid fever. On October 15 a second blood-count showed 9600 leucocytes, and on the following day the child was unconscious. This was followed by strabismus, general rigidity of the muscles, with spasms at intervals. Death occurred on the seventeenth day. Lumbar puncture performed a few hours before death secured a turbid spinal fluid which subsided upon standing. A careful study of this deposit showed it to be a pure culture of typhoid bacillus.

The Rubber Finger-cot in Obstetrics.—

A. K. Bond, in the *Maryland Medical Journal* of October 14, 1899, says that he has used the thinnest of finger-cots in obstetric work for some time, and believes that they deserve to be generally adopted. These are commonly sold in the market for five cents each. They prevent any possible infection of the finger, and are in themselves perfectly aseptic if kept with reasonable care. A thin cover presents no obstacle to the perfect appreciation of the

relation of the bony parts of the parturient canal and the resistance of the tissues forming its walls. The degree of dilatation and tension of the cervix is easily appreciated. In rectal examination made during the course of delivery the cot is especially valuable in protecting the finger against infection, and this is especially important, as there is no opportunity for cleansing the hands at this time. He also believes that it has a range of usefulness in the exploration of infected cavities. Surgeons should avoid the slightest exposure of the skin to infection, as the hands are with difficulty disinfected afterward. The less frequently infected material is brought in contact with the hands the better for aseptic surgical work.

Palatable Quinine Mixture for Children.—

W. J. Greanellá, in the *New York Medical Journal* of October 28, 1899, has found much dissatisfaction with the ordinary quinine mixtures, and has been experimenting in the preparation of one that would admit of the continuous administration of the drug to infants without objection on the score of its bitter taste. In the preparation the following ingredients are employed:

(1)	Hydrochlorate of quinine	5 to 10 grains.
	Alcohol	1 drachm.
Mix.		
(2)	Oil of cinnamon	30 to 40 minims.
	Oil of anise	30 to 40 minims.
	Magnesia	q. s.
	Water	1 ounce.

Let stand for some hours and filter. Mixtures 1 and 2 are then added to three ounces of simple syrup, which is colored with five minims of carmine or cochineal solution. The dose of the whole mixture is from one minim to two drachms. Saccharin in small quantities helps to disguise the taste of quinine.

A Gonorrheal Puerperium.—

C. G. Cumston, in the *Annals of Gynecology and Pediatry* for October, 1899, says that no definite symptomatology of a gonorrheal process during the puerperium can be described. The infection may extend to the endometrium without causing serious symptoms. Fritsch's paper is quoted, in which cases are recorded where an endometritis went through its evolution without causing elevation of temperature, the process extending to the peritoneum insensibly. Authorities agree that gonorrheal disease before the puerperium runs a mild course. The slight symptoms and their rapid cessation

do not show that the disease is cured; on the contrary, the late history of these cases shows the disease to be distinctly chronic and difficult to treat. When the process involves the adnexa, removal of the appendages is a necessity. The presence of the gonococcus can usually be demonstrated by an examination of the lochia.

The Causation of Night Terrors.—

E. G. Little, in *Pediatrics* of October 15, 1899, says that the causation of night terrors in early childhood is still debatable ground. In part, the diversity of explanation is found in the unsatisfactory theories of the causation. The looseness of the name, and the fact that it covers more than one class of disorder, are to some extent responsible for the unsettled and contradictory statements on the subject. Night terrors are in the majority of cases produced by moderate but prolonged dyspnea. A considerable proportion of cases reported are due to the obstruction of the nasal fauces, while a large number are found in cases of early heart disease. Digestive disturbances do not play the important part in their causation that is generally supposed. There is no evidence of a causal connection with epilepsy or allied neuroses.

FORENSIC MEDICINE.

Two Recent Medicolegal Cases.—

The two following cases are taken from the *Journal of Mental Science* for October, 1899:

The Biddenden Tragedy.—Bertha Peterson, aged 45, daughter of the rector of Biddenden, was indicted for the murder of John Whibley. The deceased, a shoemaker, had been a teacher in the Sunday school of Biddenden, and there had been rumors eighteen months before the murder of his having behaved indecently towards a little girl of eleven. The prisoner was much interested in the rumor, was a disciple of Mr. Stead, took a great interest in the Criminal Law Amendment Act, and appears to have allowed her attention to be absorbed by these subjects until she became even more crazy than the general run of the nasty-minded apostles of purity. She purchased a revolver and practiced with it. She wrote to the deceased expressing her regret for the mistaken attitude she had adopted toward him, and asking him to meet her in the parish schoolroom in the presence of witnesses and shake hands as a token of forgiveness. The meeting took place, and then, asking deceased

to take a good look at a picture on the wall, she placed a revolver to the back of his head and shot him dead. Evidence was given of various eccentricities in the previous conduct of the prisoner, and Dr. Davies, superintendent of the Kent County Asylum, and Dr. Hoare, surgeon to the Maidstone Jail, in which the prisoner had been detained pending her trial, stated that in their opinion the prisoner was under the hallucination that she was ordered to shoot the man. At this point the judge interposed and invited the jury to stop the case. The jury preferred to hear the commencement of the speech for the defense, but before its conclusion they returned a verdict of guilty, but insane.

This case aroused considerable interest at the time of the murder. It is another instance of the exaggerated effect that any emotional propaganda may have upon persons of unstable brain. The unfortunate woman's mind was obsessed by the pseudo-revelations of Mr. Stead's pornography, and her crime was the result of her obsession. The ease with which the plea of insanity was established is rather remarkable in consideration of the elaborate premeditation and contrivance exhibited.

This case is of especial interest to the American psychiatrist because of its striking relation to the Prendergast trial. The evidence of premeditation and adaptation of means to ends shown by this unfortunate lunatic were of the same kind as those relied upon by the prosecution to prove the sanity and full responsibility of Richard Prendergast for the murder of Carter Harrison.

Regina vs. Ansell. — Mary Ann Ansell, aged 18, domestic servant, was indicted for the murder of her sister, Caroline Ansell, a patient in Leavesdown Asylum. The prisoner insured the life of the deceased for twenty-two pounds ten shillings. Early in the present year prisoner purchased several bottles of rat poison, saying that her mistress had sent her for it. On February 22 deceased received by post a parcel containing tea and sugar, but when used they were found to have a bitter taste and were thrown away. On February 24 deceased received a letter containing the false intelligence of the death of her father and mother, and purporting to be signed by a cousin, who, however, denied having sent it. On March 9 deceased received by post a jam sandwich, which she shared with two other inmates. All three were taken very ill, and Caroline Ansell died. The prisoner advised her father not to allow a post-mortem examination to be made, and with his consent wrote a letter in his name forbidding the examination. The prisoner's mistress denied having sent her for rat poison, or having used rat poison.

The plea of insanity was raised on the ground that although the prisoner had never been insane, she had several relatives in asylums, and Dr. Forbes Winslow was the only medical man who could be found to say that the prisoner was irresponsible. The jury found the prisoner guilty. After the trial considerable agitation was raised for the reprieve of the prisoner, and pressure was even brought to bear upon the Home Secretary by means of questions in Parliament with this object. The Home Secretary did not interfere, however, and the girl was hanged.

We are clearly of the opinion that the verdict, sentence, and action of the Home Secretary were right. A more deliberate and cold-blooded murder has seldom been committed for a more sordid purpose. The deed was planned with cunning and carried out with merciless cruelty. Of evidence of insanity on the part of the prisoner there was not a shred. It was said that she had several insane relatives, but this was denied by her father; and even if it were a fact, it is utterly out of the question that every person with an insane heredity should be held immune from punishment. Such a practice would be intolerable, as well as most unjust. That a medical man could be found to express an "emphatic" opinion of the prisoner's irresponsibility is much to be regretted, but it is satisfactory to find that no alienist could be found to indorse that opinion.

A Psychological Study of Jurors.—

T. D. Cruthers, in the *Medical Record* of October 21, 1899, has found in the capricious and whimsical character of the verdicts of juries an inviting field of study. He says that from a medical and scientific point of view the average twelve men who are appealed to by the counsel and judge to determine wisely the issue of a case are usually incompetent naturally, and are generally placed in the worst possible conditions and surroundings to exercise average common sense in any disputed case.

In a recent noted trial, out of a panel of one hundred jurors, twelve men were finally selected after a long, searching inquiry. Five of them were farmers accustomed to working hard every day in the open air, men who were unaccustomed to thinking or reasoning except in a narrow way among their surroundings and along their line of work. Of the remaining seven, one was a blacksmith, two were mechanics, one a horse trader, one a groceryman, one a retired farmer and trader, and the last an ex-railroad man who had no business. Not one of these men would have been chosen to

take charge of a trust or to decide a matter outside of every-day life. For ten days this jury was confined from five to six hours a day listening to the testimony of the mental capacity and the motives of the maker of a will that was disputed.

The author mentions numerous instances where jurors were called to decide a most complicated state of facts, having not the slightest training in their occupation or previous education fitting them for such analysis. The ostensible purpose in the selection of a jury is to secure men of honesty, intelligence, and courage; in reality the practice is to gather men who can be influenced by the counsel, men having some weakness which can be taken advantage of by one side or the other. The care of a jury during a trial is also open to the most serious objection. Their daily habits of life are interfered with in capital cases by confinement, with changed diet and strange beds; these, with the addition of badly ventilated court rooms, invariably lead to inattention.

The following record of a juryman's experience was made by a carpenter of more than average intelligence. He put down each night his impressions. The first day he was impressed with the magnitude of the case and the sadness of the prisoner. He did not sleep the first night, for the reason that four men occupied one room. The air was bad, and two men snored loudly. The second day he tried to remember all that the witnesses said, and its bearing on the case, and at night was very weary and went to bed early, but was wakened and disturbed by the other jurors. The third day his head ached, and he could with difficulty follow the testimony. His appetite was poor and he was drowsy. The fourth day he was astonished to hear opposing evidence; statements which had been made by apparently honest men were stated to be false. He was shocked, and his first impressions and personal interest were disturbed. His head ached and he felt weak and nervous. His appetite and sleep were broken. The fifth day he gave up all efforts to follow the testimony or to understand what was said. He felt stupid and excessively tired. The other jurors began to complain of the food and sleeping-rooms, and had several quarrels with each other on religious and political matters. Foolish stories were told, and card-playing and personal boasting filled up the evenings. They all manifested disgust at the trial and longed for the end, and declared they would never be caught in a similar case. On the sixth day the case was closed. The arguments of attorneys and the judge's charge seemed very dull and wearisome. He felt sick, looked forward to a release, and his interest in the case died out.

He could not understand why so much was said that was contradictory, and why the judge should not tell them the real facts of the case. In the jury-room no discussion took place; each one voted "guilty" or "not guilty;" and when they found the majority was "guilty," most of them followed the majority. Two of the minority became angry and refused to vote for over a day, except in favor of the prisoner. They gave no reasons for their belief, only saying they were right and the rest of the jury were wrong. Finally, one of these men was accused of having some personal object in voting for the prisoner, and after some short altercation he changed, and the other man followed him, and the verdict of "guilty" was agreed upon.

The Relation of Trauma to Tuberculosis.—

George Blumer has an interesting summary of the relations of trauma to tuberculosis in the *Albany Medical Annals* for November, 1899. This subject is of increasing importance, due to the growing class of litigation, in which the remote consequences of most any disease or infection are frequently attributed to an antecedent injury, however remote. This is especially true if there is legal responsibility for the accident. He studies the relation of tuberculosis to trauma under two heads: first, the relation of accidental injuries to tuberculosis, and secondly, the relation of surgical intervention in local tuberculosis to the generalization of the disease. The first heading is the one that includes the majority of the cases of medicolegal interest. Certain portions of the body are apt to become the seats of accidental tuberculosis. The lungs, meninges, and joints are the most susceptible regions. Cases of pulmonary and pleural tuberculosis of traumatic origin are not common, though there are several quite convincing cases on record. Chauffard has carefully described three cases of tubercular pleurisy following accident. One of these was that of a middle-aged man who fell, striking the right side of the chest wall. Ten days later he was taken with severe pain in the injured side, fever, and dyspnea. On his entrance into the hospital 1500 cubic centimeters of fluid was withdrawn. A guinea-pig inoculated with the fluid developed tuberculosis and died from it.

Cases of pulmonary tuberculosis following trauma are quite as rare as cases of pleural involvement. Stern, in his monograph on the traumatic causation of internal diseases, only recognized two authentic cases. In one case reported by Harris, in which typical lobar pneumonia followed an injury to the chest, the case came to

autopsy, the affected lung showing many recent cavities and many old foci of tuberculosis. In this case it is probable that the infecting bacilli came from the old quiescent foci. It is possible that old and quiescent lesions may account for most of these cases.

Tubercular meningitis following injury to the head has furnished a number of interesting observations. A case reported by Schilling was that of a boy, who after receiving a blow on the head was unconscious for two days. Eleven days after the accident he developed marked meningeal symptoms and died in ten weeks. The autopsy showed tubercular meningitis and caseated tracheal lymph glands. In most of these cases where autopsies were made some old tubercular lesion was found. Traumatic joint tuberculosis is a condition universally recognized. A considerable proportion of the cases of joint tuberculosis give a clear history of injury. Traumatism, though acting as an immediate factor in some forms of tuberculosis, does so merely by favoring the attack of the tubercular bacillus, by creating a point of least resistance.

Morphinism Associated with Theft.—

Geo. Villeneuve reports in the *Montreal Medical Journal* for October, 1899, a case in which irresponsibility was pleaded on the ground that the accused was addicted to the use of morphine. It was stated that the accused had a bad reputation both in the courts and in police circles, and he was regarded by the authorities as a common criminal. While he had never been arrested before the instance under investigation, yet he had no very evident means of support. Theft of merchandise from a store was the crime charged. The problem in such a case is different from that presented in the average case of insanity, which simply narrows itself to the determination of presence or absence of mental disease. In this case the irregularities are dependent upon the action of a toxic agent and may appear during the action of the agent or after it is withdrawn, the periods of mental disturbance being often separated by lucid intervals. In the case in question the use of morphine dated back some years, but was not habitual. He had twice given way to a craving for morphine, but after treatment had recovered. The attack during which he was examined was initiated by the taking of morphine while under surgical treatment. This soon degenerated into the abuse of the drug, which was prolonged far beyond the necessity for its use. While incarcerated he showed unmistakable signs of forced abstinence from the drug, characterized by disquiet and uneasiness, cramps and pain in the legs, diarrhea, sweating, and insomnia.

The reporter came to the conclusion that the accused was not insane and never had been. He says that morphine addiction rapidly reaches the point where the victim commits indelicate actions without comprehending the importance of what he has done. There exists at an advanced period of the habit a rare diminution of will power, which ceases to revolt against certain vicious and criminal tendencies. In the case of prolonged morphine intoxication, when the tissues are so saturated with the drug as to alter the cerebral functions, when it has caused consequent intellectual weakness and diminution of the moral sense, responsibility should be lessened. When a crime is an act of a morphine user forced there by the deprivation of the drug, it should be regarded as a pathological impulse and no criminal responsibility should attach. The delirium of morphine should wholly absolve from responsibility.

Magnetic Healing.

The *Journal of the American Medical Association* of October 7, 1899, states that the Appellate Court of the Third District of Illinois, in its May term, handed down the following decision in the case of an action for debt, brought in the name of the people for the use of the State Board of Health to recover a penalty which had been imposed for practicing medicine without a license. It appeared from the evidence that a magnetic healer kept an office in the city of Bloomington where he treated people for disease. He advertised that he had effected marvelous cures, without the use of medicine or surgery, by magnetic treatment. His charges were $1 per treatment, or $5 for seven treatments. It was stated in the trial that he had treated one man for disease of the stomach, another for asthma, and a third for sunstrokes and subsequent ailments. The method of treatment was by rubbing the parts of the body supposed to be affected. The man who was treated for sunstroke was to pay $30, $15 in money and $15 in hack hire, all but $2 of which had been paid. It was claimed by the appellant (magnetic healer) that these facts did not show that he was practicing medicine within the meaning of the statute. The act in question declares that any person shall be considered as practicing medicine within the meaning of the act who shall treat, operate on, or prescribe for any physical ailment of another. In answer to this question the court says: "If to treat or operate upon a person for a physical ailment by rubbing the part affected is not a treatment or operation for a physical ailment, what is it? It seems to us the mere statement of the question demonstrates the absurdity of every opposite position." The decision of the lower court was affirmed.

"Knock-out" Drops.—

The *Boston Medical and Surgical Journal* of October 5, 1899, is authority for the statement that a man was convicted in the Court of General Sessions in New York of having "knock-out" drops in his possession. This is said to be the first conviction of the kind in the New York criminal courts. Persons have been convicted for using such drops to assist them to rob, but in all cases the convictions have been made on the robbery.

The person in this case was first tried on a charge of robbing a man of $100 in a saloon. The evidence not being sufficient he was acquitted, but the fact was brought out at the trial that he had "knock-out" drops in his possession, and the Recorder suggested to the district attorney's office that the case be brought before the grand jury. This being done he was indicted, and at the trial expert testimony was introduced which proved that the vial which the prisoner had contained chloral hydrate. The maximum penalty for this offense in New York is ten years in the penitentiary. Attention has been called in these columns to the increasing frequency of crimes of this character. They belong to a class which should be put in the same category as highway robbery, because in their essential nature they are an assault upon the person. Various drugs have been employed, some of them dangerous, and an occasional death has resulted from the effort to render people stupid and unconscious as an accessory to robbery. The criminal classes, however, have largely settled down to the use of chloral hydrate, and it is from thirty to sixty grains of this substance, usually administered with beer, that furnishes the famous "knock-out" drops. They rapidly produce unconsciousness, and are especially efficacious where a person is partially intoxicated.

A Case of Rapid Ante-Mortem and Post-Mortem Decomposition.—

E. B. Whitcombe, in the *Journal of Mental Science* for October, 1899, describes a very interesting case from a medicolegal standpoint, and one that is rare in the history of forensic medicine. The patient was a man 39 years of age, fairly robust, and a typical example of general paralysis of the insane. The disease progressed slowly for about eleven months, when on January 14 of this year it was noted that his breathing was a little rapid. In consequence he was sent to the infirmary, and was examined thoroughly by the assistant medical officer, who found nothing abnormal; but he ordered him put to bed and kept warm. At seven o'clock the same evening the left leg from the thigh down was found to be double the size

of the opposite one, the whole surface being black. There were numerous large bullæ upon the leg. At first it looked like an extreme case of local purpura, but a closer examination showed that gangrene had actually set in. An hour later the patient died. Between 10 and 11 A.M. the following day, about ten hours after death, the body was enormously swollen, black, and covered with bullæ. The case was the more extraordinary as the highest temperature recorded locally was 52.8°, and the lowest 34°. A post-mortem examination was made, but putrefaction was so far advanced that nothing could be determined regarding the cause of death or the condition of the internal organs. No cause for the extremely rapid putrefaction could be determined. No bacteriological examination was made, which the reporter very much regrets.

The Charges for Medical Service.—

A case of some interest is reported in the *Boston Medical and Surgical Journal* of October 26, 1899. The bill of two homeopathic physicians, $70 for the attending physician and $175 for the consultant, who made six visits in a case of fractured elbow, was disputed by the patient. The treatment resulted in a stiff elbow-joint, and a counter claim was interposed for $500 for malpractice. In the trial court the full amount of the bill was awarded the physicians. The case was then taken to the court of pleas, in which the decision of the lower court was reversed. In sending the case back for retrial, the Supreme Court says: "There was no justification by custom or otherwise in the plaintiff's employment of the consultant without a frank and full statement of the situation to the patient, and his wishes concerning the professional persons to be brought in should have been ascertained. There cannot be properly applied to the facts shown here any custom multiplying ordinary professional charges five or ten times under the shield of a layman's ignorance, because it is subversive of justice that charges should be so largely increased by a custom not made known at all to the patient."

It is understood that all original communications sent to this journal are for its pages exclusively, excepting in cases where articles are published in the transactions of the Societies before which they are read, or in which an abstract appears. Articles will be illustrated. Authors will be furnished a liberal number of reprints; or, if they so elect, an honorarium will be paid for original communications.

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